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The Role of Narratives in Asset Bubble Formation:

The Case of the U.S. Tech Bubble

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ABSTRACT

From the feverish buying of tulips in Amsterdam in the 1600s to the recent U.S. frenzy in subprime mortgages, asset bubbles have proven to be a recurring economic phenomenon. While large asset bubbles, such as the U.S. stock bubble of the 1920s and the Japanese bubble of the 1980s, can result in pronounced, long-term financial and social consequences, even seemingly benign bubbles usually result in the misallocation of resources and budgetary problems for governments.

In response to the regularity and consequences of these events, asset bubbles have been studied by a large number of scholars covering an increasingly diverse range of academic disciplines. Unfortunately, despite these ever-expanding streams of research, asset bubbles remain a poorly understood aspect of our economic worlds. What is worse, numerous scholars, practitioners, and policymakers feel as though we lack even a basic understanding of these events, a failure that is now undermining the reputation of today's globalized, free market system.

In this thesis, I argue that narratives play a central role in market speculation and thus the detailed and systematic study of narratives in these events provides a promising means by which to advance our understanding of how asset bubbles form. In light of this observation, I develop a conceptual framework, referred to as the institutionalized narrative (I/N) perspective of asset bubbles, and, using this framework, conduct a longitudinal study on the role that narratives played in the U.S. technology (tech) bubble of 1997 to 2000.

The I/N perspective developed in this manuscript is a research lens and sensitizing mechanism that adopts a social constructionist view of financial markets where powerful market actors and institutions play a dominant role in shaping market behavior. In particular, the I/N perspective combines narrative research with institutional theory to explore how narratives that lead investors to expect significant capital gains, referred to as boom narratives, ultimately become the taken-for-granted context by which investors make decisions. Following this framework and using the U.S. tech bubble as a case study, this thesis investigates how boom narratives in tech stocks became a taken-for-granted, institutionalized aspect of investing in the mid to late 1990s and why efforts to challenge or deinstitutionalize these narratives repeatedly failed.

These questions were investigated through an in-depth study of the events surrounding the U.S. tech bubble and 400 institutional texts (approximately 4,000 pages of raw data) that covered the years 1987, the year of the preceding market crash, to 2000, the peak of the tech bubble. Texts were gathered according to the three pillars of institutionalization, being the cognitive (represented by 65 speeches by Federal Reserve officials), normative (represented by 135 articles from *The New York*

Times and *Forbes*), and regulative (represented by 200 statements by speakers at hearings from the U.S. Senate Committee on Banking, Housing, and Urban Affairs). Analysis was conducted through a unique combination of an event history database, keyword sampling, narrative analysis, discourse analysis, and process analysis.

Drawing on the findings of this study, I outline a narrative theory of asset bubble formation. This theory contends that large-scale bubbles can emerge through three interrelated phases of narrating a crisis, narrating a recovery, and narrating a boom. If certain conditions are met in each phase, increasing levels of herd behavior, speculation, and illegal market practices are predicted to follow.

In the first phase, narrating a crisis, powerful market actors are largely aligned in their exposition of negative narratives and view overregulation and business constraints as critical impediments in the economy. In the second phase, narrating a recovery, the dominant narratives tend to view continued deregulation as an economic enabler and the possibility of stricter regulations as a dangerous impediment, while normative texts start to produce increasingly positive narratives over time. In the third and final phase, narrating a boom, powerful market actors, particularly from the more prudent and powerful cognitive and regulative pillars, expound increasingly positive and optimistic narratives, while a range of alternatives to fundamental analysis start to dominate discourse.

Given its focus on a critical and neglected aspect of asset bubble formation, being narratives, and its longitudinal consideration of narratives, actors, and events, the narrative theory offers a novel and rather detailed account of how large-scale bubbles can form. As a result of this novelty and detail, the theory serves to complement, integrate, and challenge existing thought on these episodes. In particular, the narrative theory highlights the importance of narratives and actions during a crisis and recovery, the highly influential role of cognitive and regulative texts, the replacement of fundamental analysis with a range of alternative means, and the incompleteness of existing theories on asset bubbles from a range of disciplines.

DECLARATION BY AUTHOR

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PUBLICATIONS DURING CANDIDATURE

Peer-reviewed papers

- Teeter, P., Sandberg, J. 2017. Cracking the enigma of asset bubbles with narratives. *Strategic Organization* **15**(1): 91–99. DOI:10.1177/1476127016629880.
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KEYWORDS

asset bubbles, speculation, financial crises, narratives, institutional theory

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TABLE OF CONTENTS

FIGURES & TABLES

FIGURES & TABLES (CONTINUED)

FIGURES & TABLES (CONTINUED)

ABBREVIATIONS

ABS	Asset-backed security
BLS	Bureau of Labor Statistics
CD	Certificate of deposit
CDO	Collateralized debt obligation
CDS	Credit default swap
CDT	Cable Design Technologies
CEO	Chief Executive Officer
CFMA	Commodity Futures Modernization Act
CFTC	Commodity Futures Trading Commission
CIA	Central Intelligence Agency
CPI	Consumer price index
GDP	Gross domestic product
GFC	Global financial crisis
I/N	Institutionalized narrative (perspective)
IMF	International Monetary Fund
IPO	Initial public offering
IT	Information technology
LBO	Leveraged buyout
LTCM	Long-Term Capital Management
M&A	Mergers and acquisitions
MBS	Mortgage-backed security
NPV	Net present value
NYSE	New York Stock Exchange
P/E	Price-to-earnings
P/S	Price-to-sales
PC	Personal computer
ROI	Return on investment
S&P	Standard & Poor's
SEC	Securities and Exchange Commission
SIV	Structured investment vehicle
SPV	Special purpose vehicles
TI	Texas Instruments
ToM	Theory of mind
VaR	Value at risk

CHAPTER 1: THE ENIGMA OF ASSET BUBBLES

> "We still do not have a good definition of an asset bubble; and we still do not know how to identify them, what causes them to grow or burst, and what their welfare implications are."
>
> -Douglas Evanoff, George Kaufman, and Anastasios Malliaris, in Chicago Fed Letter (2012, p. 4)

For the past two centuries, asset bubbles have plagued the world's economies. Occurring in a wide range of assets from stocks and bonds to real estate and precious metals, bubbles have struck both developing and developed countries on a repeated basis.

Historic accounts of asset bubbles date back to the early 1600s, beginning with the Dutch tulip bubble of 1636 to 1637, and include several other frequently cited events such as speculation in the South Sea Company and Mississippi Company circa 1720, the bubble in stocks during the Roaring Twenties that immediately preceded the Great Depression, and excessive loans to a number of countries in Latin America during the 1980s. Despite the historical regularity of these events, in the late 1980s—during a period referred to as the Great Moderation—the belief emerged that modern economies had rid themselves of the large-scale bubbles and excessive volatility of previous eras.

This belief was then quickly shattered by an unprecedented wave of bubbles of increasing scale and scope. First, in the early 1990s, Japan's nearly decade-long bubble burst, and the nation's home prices, measured in real terms, dropped almost 70 percent over the next 15 years (Kindleberger and Aliber, 2011). Just a few years after the bursting of Japan's bubble, a crisis erupted in Southeast Asia and quickly spread to Russia and South America. Fearing that the contagion from this crisis could disrupt the entire U.S. banking system, the U.S. Federal Reserve hastily arranged a multi-billion dollar bailout of one of the nation's largest hedge funds (MacKenzie, 2003; Stein, 2003). Before the dust from this fallout had even settled, global stock prices soared, particularly prices of U.S. technology stocks. At the turn of the century, however, share prices in most major financial centers, including France, the United Kingdom and the United States, crashed, with U.S. technology stocks experiencing a stunning 80 percent decline in just three years.

Amazingly, in spite of this relentless barrage of financial calamities, in the early 2000s the belief reemerged that modern economies were bubble-free and the historically high stock and real estate valuations in the developed world were somehow justified in this "new" era (Reinhart and Rogoff, 2013). In 2007, to nearly everyone's amazement, a rising number of defaults on subprime home loans led to a near meltdown of some of the world's largest banks.

While most asset bubbles do not result in the panic and chaos referred to above, many of them do result in the misallocation of resources and budgetary problems for governments. For example,

housing booms often encourage too much investment in real estate and underinvestment in personal savings, which was the case in the United States during the 1990s and early 2000s (Akerlof and Shiller, 2009). Governments suffer when the growth of bubbles brings in increased revenue in the form of taxes, enabling officials to raise expenditures, but then revenue suddenly drops after the bubble ends, leaving governments with huge deficits as those expenditures are often very difficult to scale back in time (Reinhart and Rogoff, 2013; Shiller, 2005).

However, when the bursting of a large-scale bubble results in financial panic, such as a banking crisis, the consequences are much worse. The chain of events that typically ensues is that falling real estate or stock prices cause overleveraged sellers to default, which immediately damages the balance sheets and lending ability of most financial institutions, leading to the failure of several banks. As businesses are unable to secure new loans and lose confidence in the economy, investment dries up, which results in lower wages and the loss of jobs. As these affected workers have less money to spend, consumption also dries up, which in turn affects businesses, and a vicious cycle develops. Eventually, the government and other institutions, such as a central bank, are left with no choice but to intervene to prop up failing banks and restore confidence in the economy—an intervention that usually results in huge costs to taxpayers and even larger government deficits.

These consequences are perhaps best illustrated by the recent global financial crisis (GFC) that followed the U.S. housing boom of 2002 to 2007. According to an estimate by the International Monetary Fund (IMF), the GFC resulted in over US$4.1 trillion in assets being written off financial books (IMF, 2009), with total commitments by the U.S. government at almost US$9 trillion (Munir, 2011). Aside from these economic consequences, estimates suggest over 200 million people were pushed into poverty as a direct result of the crisis (ILO, 2009).

The significance and spread of asset bubbles has resulted in a number of steadily expanding research streams that seek to understand, explain, and predict these events. The largest stream by far is composed of mainstream economic theories, which largely view market participants as rational decision-makers and thus financial markets as the best means of pricing assets. Through this lens, mainstream economists have put forward a number of theories on the causes of asset bubbles, which include explanations of market frictions (Miller, 1977; Palfrey and Wang, 2012; Scheinkman and Xiong, 2003; Shleifer and Vishney, 1997), rational speculators (Brunnermeier and Nagel, 2004; DeLong *et al.*, 1990; Doblas-Madrid, 2012; Flood and Hodrick, 1990), intrinsic and extrinsic bubbles (Azariades, 1998; Froot and Obstfeld, 1991), and a fundamentalist view that bubbles simply do not exist (Fama, 1965; Garber, 2000; Pástor and Veronesi, 2006).

While these theories greatly aid in understanding a number of smaller, more isolated asset bubbles, the recent surge in bubbles of increasing reach and volatility has resulted in a rather intense backlash against these mainstream explanations (e.g., Evanoff *et al.*, 2012; Friedman, 2011; Issing, 2009). In particular, the consequences of the recent housing bubble have "forced researchers and policymakers to reconsider their understanding of both the economics of asset price bubbles and alternative policy options to address them" (Evanoff *et al.*, 2012, p. 1).

As a result, attention has shifted to a second growing research stream, which is research on the role that irrational behavior plays in financial decision-making. This stream, which includes the fields of behavioral economics, behavioral finance, and economic psychology, has also offered a number of theories on how asset prices can occasionally reach such stratospheric heights. Included in such theories are notions of "group think" and "herd behavior" (De Martino *et al.*, 2013; Galariotis, Rong, and Spyrou, 2015; Hommes *et al.*, 2008; Hüsler, Sornette, and Hommes, 2013; Kindleberger and Aliber, 2011; Moinas and Pouget, 2013; Schoenberg and Haruvy, 2012), "escalation of commitment" (De Bondt and Thaler, 1995; Staw, 1976), overconfidence and euphoria (Heath and Tversky, 1991; Minsky, 1986, 1992; Roll, 1986), and, even, blaming testosterone (Eckel and Füllbrunn, 2015).

Again, while all of these explanations seem to offer some useful insight into behavior during speculative events, behavioral theories of asset bubble formation suffer from overlooking a critical aspect of all large-scale bubble episodes, namely the overarching political, social, and cultural conditions under which bubbles form. This observation is now being increasingly voiced by researchers (e.g., Shiller, 2014; Stracca, 2004) and has resulted in a third, much more recent, stream of research on these events, being research from the overlapping fields of sociology and organizational studies. A recent spate of such studies (e.g., Abolafia, 2010a; Campbell, 2010; Davis, 2010; Engelen *et al.*, 2012; Hirsch and Morris, 2010) has largely identified institutional and regulatory failures as primary culprits in recent bubble episodes, while factors such as greed (Perrow, 2010) and cultural arrogance (Stein, 2011) have received some attention.

Given such a large number of research efforts, one would think that we would now possess a rather thorough or comprehensive understanding of how and why asset bubbles form and thus the ability to quickly identify and even, in some cases, predict and prevent such events from occurring. Unfortunately, as so succinctly expressed by Evanoff, Kaufman, and Malliaris in this chapter's opening quote, the consensus seems to be that we still know so very little about asset bubbles. In this thesis, I argue that our lack of understanding of how asset bubbles form is directly linked to a critical oversight. The oversight is simple: research on asset bubble formation has overlooked and

neglected a core driver of decision-making during periods of market speculation, that being *narratives*.

In basic terms, a narrative is a cohesive story or account of events, experiences, or phenomena, whether true or fictitious. Narratives, which are a retrospective sense-making tool, are ubiquitous in our social worlds and, for reasons explained in this thesis, play a dominant role in the development of asset bubbles. The power of narratives in asset bubble formation has, in fact, been hinted at numerous times. Just over the past few years, a number of studies and well-known scholars have highlighted the importance of news, stories, or rhetoric on the emergence of asset bubbles (e.g., Akerlof and Shiller, 2009; Bhattacharya *et al.*, 2009; Hansen, 2014; Munir, 2011; Roy and Kemme, 2012). Disappointingly, though, these works have resulted in very little scholarly attention to how narratives influence the growth of asset bubbles. In this thesis, I tackle this very oversight by conceptualizing and investigating the role that narratives play in asset bubble formation.

The remainder of this thesis is structured as follows. First, in Chapter 2, I provide some background information on how asset bubbles are defined and more detail on some of the more prominent bubbles of the past few hundred years. I then review the main theoretical contributions put forward from both within and outside the field of economics and discuss the limitations of these explanations. I then present my argument as to why narratives are so influential in the emergence and growth of asset bubbles.

In Chapter 3, I develop a conceptual framework by which to investigate the role that narratives play in asset bubble formation. Referred to as the institutionalized narrative (I/N) perspective of asset bubbles, this framework serves as a research lens and sensitizing mechanism that allows for the in-depth, longitudinal study that comprises the bulk of this thesis.

Aside from outlining and illustrating this framework, Chapter 3 also explains the two research questions posed in this thesis, those being 1) How does a boom narrative become institutionalized? (in other words, how do expectations of significant capital gains become a taken-for-granted aspect of investment?), and 2) Why do efforts to deinstitutionalize boom narratives fail? (or why do efforts at challenging these expectations, and thus "pop" the bubble, seem to always fail?).

Chapter 4 then details the research design, including explanations of case selection, choice of methods, data collection, analysis techniques, and validity and reliability criteria. In brief, this study employed a unique combination of narrative analysis, an event history database, discourse analysis, and process analysis to examine the U.S. tech bubble of 1997 to 2000. Data was collected according to the three pillars of institutionalization, with texts sampled from the U.S. Federal Reserve

(representing the cognitive pillar), *The New York Times* and *Fortune* magazine (normative pillar), and hearings from the U.S. Senate Committee on Banking, Housing, and Urban Affairs (regulative pillar).

Chapters 5 through 9 present the findings of this study. These findings include results from the event history database (Chapter 5), the narrative and discourse analysis of the three pillars (Chapters 6, 7, and 8), and the process analysis of the totality of my data (Chapter 9). Through these analytical steps, at the end of Chapter 9 I arrive at eight overarching conclusions concerning the institutionalization and failed deinstitutionalization of boom narratives during the tech bubble.

In the final chapter, Chapter 10, I draw on these empirical findings to outline a narrative theory of asset bubble formation. This theory contends that large-scale bubbles can emerge through three interrelated phases of narrating a crisis, narrating a recovery, and narrating a boom. If a number of certain conditions are met in each phase, increasing levels of herd behavior, speculation, and illegal activity are predicted to follow. Given its focus on a critical and neglected aspect of asset bubble formation, being narratives, and its longitudinal consideration of narratives, actors, and events, the narrative theory presents a novel and rather detailed account of how large-scale bubbles can form. As a result of this novelty and detail, the theory serves to complement, integrate, and challenge existing thought on these episodes. At the end of Chapter 10, I elaborate on these implications and conclude with a number of suggestions as to how future studies can start to test and build upon the narrative theory.

CHAPTER 2: ASSET BUBBLES AND THEIR THEORETICAL EXPLANATIONS

This chapter provides an overview of asset bubbles, their theoretical explanations, and the limitations of extant theory. The main conclusion from such an overview is that, despite numerous contributions from a range of disciplines, we still have a very poor understanding of how asset bubbles form. In this chapter I also observe that the role of narratives and narrative thought in asset bubble formation has been largely overlooked and neglected. I argue that these two observations are not coincidental and that narratives are a core driver of financial decision-making during bouts of speculative mania. Thus, careful and systematic investigations into the role of narratives in asset bubble formation provide a promising means by which to advance our understanding of these events.

This chapter is structured as follows. First, I provide some background information on asset bubbles, including the two most commonly cited definitions of an asset bubble and a brief description of some of the more notable bubbles of recent history. I then outline the main theoretical explanations of asset bubbles from a diverse range of academic fields and explain the limitations of these theories. I conclude the chapter with an explanation of why narratives play such an influential role in market speculation and why narrative research is a promising means by which to better understand these events.

2.1 What is an asset bubble?

There are two widely used definitions of the term "asset bubble," which is also commonly referred to as a "speculative bubble." The first definition, which can be referred to as the *fundamental value definition*, recognizes an asset bubble as existing "when the market price of an asset exceeds its price determined by fundamental factors by a significant amount for a prolonged period" (Evanoff *et al.*, 2012, p. 1).[1] This is the general definition of bubbles commonly employed by most economists (see, e.g., Barlevy, 2007; Dale, Johnson, and Tang, 2005; Kindleberger and Aliber, 2011; Scheinkman and Xiong, 2003; Stiglitz, 1990), who sometimes adopt a more specific definition according to their research setting or their view of the cause(s) of bubbles.

For example, Scheinkman and Xiong (2003), in their study of asset trading with short-sale constraints, define an asset bubble as the "difference between the current owner's demand price and his fundamental valuation, which is exactly the resale option value" (pp. 1185–1186), while Stiglitz (1990) refers to bubbles as a condition when prices are high "*only* because investors believe that the selling price will be high tomorrow—when 'fundamental' factors do not seem to justify such a price"

[1] A situation where an asset's price falls significantly short of its fundamental value is referred to as a "negative bubble."

(p. 13, emphasis in original). In this definition, an asset's fundamental value is its estimated net present value (NPV), which is defined as "the expected value of all dividends the asset yields over its lifetime, properly discounted to reflect the present-day value of dividends paid at future dates" (Barlevy, 2007, p. 46).

The second commonly used definition, which can be referred to as the *boom-to-bust definition*, recognizes a bubble as a situation in which the price of an asset rises rapidly in a short period and then drops in a similarly dramatic manner, resulting in a noticeable "spike" in asset values. This definition is frequently cited in the popular press (Barlevy, 2007) but is also sometimes invoked by academics (see, e.g., Griffin *et al.*, 2011). Due to its lack of economic jargon, the boom-to-bust definition offers a description of bubbles that is easy to comprehend, hence its popularity in the press, and rather succinctly depicts some of the more notable bubbles of the past 100 years, such as the stock bubble of the 1920s or the housing bubble of 2002 to 2007.

While these two definitions do overlap and may refer to the same bubble phenomenon in many cases, there are notable differences between them. First and most obvious, a boom-to-bust definition requires an asset's price to crash before it can confidently be labeled a bubble, whereas a fundamental value definition does not. Therefore, assets that appear overvalued but have yet to decline in price would be regarded as bubbles under a fundamental value definition but not under a boom-to-bust definition.

A more contentious difference between the two definitions is that the boom-to-bust definition does not make explicit the nature or cause of the price swing. This deficiency is seen as particularly problematic by most economists, who view price swings as quite natural and even desirable in some situations (Barlevy, 2007). Barlevy (2007) provides the example of new fashion accessories, where prices can often surge due to an initially limited supply and then drop steeply once supply catches up or fashion trends shift. In these situations, price swings are seen as useful indicators to manufacturers of when to increase and decrease supply, a scenario that hardly justifies bubble terminology.

That is not to say that the fundamental value definition is without its drawbacks. Most notable, the fundamental value of an asset can, at times, be incredibly difficult to ascertain. Such is often the case with new products, companies, industries, and investment vehicles and during periods of significant societal change. Not surprisingly, most of the largest bubble episodes of the past few hundred years have occurred under these very conditions, a point that will be elaborated upon in the following section. Thus, during periods of significant innovation and change, asset bubbles have become rather difficult to identify with any degree of certainty.

In my explanation of a narrative conceptualization of asset bubbles, I will return to the issue of defining an asset bubble, but first, the next section provides a brief account of the history and conditions of some of the world's more notable bubbles.

2.2 A brief look at past bubbles

> "I can calculate the motions of the heavenly bodies, but not the madness of the people."
>
> -Isaac Newton, 1720, after losing over £20,000 in the South Sea Bubble (Trollope, 1860, p. 346)

Regardless if using a boom-to-bust or a fundamental value definition, asset price bubbles are "a recurrent feature of modern (post-1800) economic history" (IMF, 2003, p. 64). For example, the IMF (2003) identified 52 equity price bubbles in 19 countries between 1959 and 2002 and 23 stock market bubbles in just the United Kingdom and United States alone between 1800 and 1940.

Asset bubbles frequently occur in stocks, bonds, and real estate, such as in the 1890s stock bubble where the Standard & Poor's (S&P) index rose 36 percent from 1891 to 1892 and then fell 27 percent in just 14 months (Akerlof and Shiller, 2009) or as in the Southern California housing bubble of the 1980s where prices shot up and then collapsed by 40 percent (Kindleberger and Aliber, 2011).

However, bubbles also sometimes occur in traded commodities such as gold, as when its price rose from $40 an ounce in 1970 to $970 an ounce in 1979, only to fall back to $300 an ounce in the 1990s (ibid.), and silver, which experienced a price jump from under $9 an ounce in 1979 to over $50 an ounce in 1980 and then fell back to $10 an ounce just two months later (Abolafia and Kilduff, 1988).

Table 2.1 on the next page lists some of the more notable, and thoroughly studied, bubbles of the past few hundred years. The Dutch Tulip Mania, also referred to as Tulipomania (Dash, 1999), is generally regarded as the first recorded speculative bubble (Shiller, 2005). Tulip Mania refers to the feverish buying of tulip bulbs in 1636 during the Dutch Golden Age, in which contract prices for bulbs increased by several hundred percent to the point where some bulbs sold for more than 10 times the annual income of a craftsman (Dash, 1999). In 1637, after a local outbreak of bubonic plague, prices collapsed by over 99 percent in just a few days (Garber, 2000).

Table 2.1 The big 10 bubbles[2]

Bubble	Year	Countries directly affected	Asset(s)	Price rise (years)	Price drop (years)
Dutch Tulip Mania	1636–1637	Netherlands	Tulip bulbs	Prices increased several hundred percent (1636)	Prices fell over 99% within a few days (1637)
South Sea Bubble	1720	Great Britain	Stock	Stock rose eight-fold (Feb–June, 1720)	Stock fell to near original value (Jun –Oct, 1720)
Mississippi Bubble	1718–1720	France	Stock	Stock rose 20-fold (Jan–Dec 1719)	Stock fell by 90% (Jan–Dec 1720)
1920s stock bubble	1920–1929	U.S. and global	Stocks	Stocks rose five-fold in real value (1920–1929)	Stocks fell to below 1920 levels (1929–1932)
Loans to Latin America	1970s–80s	Mexico, Brazil, Argentina	Foreign debt	Debt = 50% GDP (1983)	Countries defaulted (1980s)
Japanese bubble	1985–1989	Japan	Real estate Stocks	Real estate prices quadrupled (1980–1991)	Real home prices dropped by 68% (1991–2006)
Nordic bubble	1985–1989	Norway, Sweden, Finland	Real estate Stocks	Prices rose five-fold (1980s)	Prices returned (1990–1993)
Asian financial crisis	1992–1997	SE Asia, Latin America, Russia, etc.	Foreign debt Stocks	Foreign debt above 180% of GDP (1993–1996)	Currencies in SE Asia lost over 30% of value (1997)
U.S. tech (dotcom) bubble	1997–2000	U.S. and global (Brazil, China, France, U.K., etc.)	Stocks	Stocks rose five-fold in real value (1997–2000)	NASDAQ declined 80% (2000–2003)
Real estate & debt bubble	2002–2007	Global: U.S., Spain, Ireland, Greece, Portugal, Spain, etc.	Real estate Gov't bonds	U.S. real estate prices doubled (1997–2006)	Prices declined by over 20% (2006–2008)

[2] As highlighted in Kindleberger and Aliber (2011, p. 11). Additional sources for this table include Akerlof and Shiller (2009), Barlevy (2007), Dale *et al.* (2005), Griffin *et al.* (2011), Shiller (2005), and Stein (2011).

The first two major stock bubbles occurred almost simultaneously in Europe in 1720—one in Britain, the South Sea Bubble, and the other in France, the Mississippi Bubble. In Britain, the South Sea Company, created in part to reduce the nation's debt, was granted a monopoly to trade with South America. Despite having never turned a significant profit, the company's stock price soared from £130 in February 1720 to over £1,050 in June of the same year, only to drop back to £170 just a few months later (Dale *et al.*, 2005). In France, the bubble was a result of speculation in the Mississippi Company, which was owned by Scottish economist John Law and held a monopoly on business in the French colony of Louisiana (Bammer, 2002). After the company's stock fell by 90 percent in 1720, Law had no choice but to flee the country (Sheeran and Spain, 2004).

Perhaps the most thoroughly studied bubble of the past 100 years is the stock bubble of the Roaring Twenties and its eventual crash in 1929 that coincided with the onset of the Great Depression. During the 1920s, stocks in the United States rose five-fold in real value during a time of increasing consumer confidence but also careless spending, rash investment decisions, loose government regulations, and high levels of corruption (Akerlof and Shiller, 2009). The euphoria officially ended on October 29, 1929, known as Black Tuesday, when stocks fell by 12 percent. The Dow Jones Industrial Average (hereafter Dow Jones) would not return to its 1929 peak valuation until 25 years later, in November of 1954 (Galbraith, 1954). The next bubble of mention did not occur until the 1980s when several Latin American countries reached a point where they were unable to meet their foreign debt obligations. During the 1960s and 1970s, developing countries in Central and South America such as Argentina, Brazil, and Mexico borrowed vast sums of money from foreign lenders, increasing from $125 billion in 1972 to $800 billion in 1982 (Kindleberger and Aliber, 2011). As interest rates increased in the United States and Europe, several countries experienced difficulties making debt repayments, resulting in a wave of defaults that started with Mexico's declaration in 1982 that it could no longer service its debt.

In the late 1980s, Japan and the Scandinavian countries of Norway, Sweden, and Finland experienced large-scale real estate and stock bubbles, with Japan's bubble resulting in a much deeper and longer retraction. By the end of the 1980s, the market value of Japanese stocks and real estate was twice that of those in the United States, despite Japan's gross domestic product (GDP) being less than half of the U.S.'s and its land area, which is mostly mountainous, equivalent to only five percent of that in the United States (Kindleberger and Aliber, 2011). At the bubble's peak, some analysts estimated the market value of the land under the Imperial Palace in Tokyo to be greater than the value of all the real estate in the state of California (ibid.). In 1991, after Japanese banks were instructed to limit the growth of real estate loans, the bubble burst. Within a few years, prices were 60 percent below their peak, a drop that "wiped out company balance sheets [and]

crippled the nation's banks" (Fackler, 2005). In Scandinavia, real estate and stock prices rose three-fold in Norway and five-fold in both Sweden and Finland, only to return to their original levels by 1993 (Borio, Kennedy, and Prowse, 1994).

In the early 1990s, a bubble formed in Southeast Asia during a period in which several companies moved production facilities to low-cost sites in the region. As foreign money flowed into these countries, the value of their currencies rose precipitously, along with a rapid increase in consumer spending and real estate and stock prices. In the first half the decade, stock prices in Thailand, Indonesia, and Malaysia increased by between 300 and 500 percent (Kindleberger and Aliber, 2011). After the devaluation of the Thai baht in 1997, investors across the globe quickly pulled their money out of the region, leading to the collapse of Asian economies and a contagious effect that spread to both Brazil and Russia. Russia's eventual default on its foreign loans resulted in the bailout of the highly leveraged U.S. hedge fund Long-Term Capital Management (LTCM), which faced a $4.6 billion debt hole (MacKenzie, 2003; Stein, 2003). Immediately following this event, a bubble formed in the U.S. stock market, one that was centered on highly speculative investments in technology companies, primarily internet start-ups. From 1997 to 2000, U.S. technology stocks rose more than five-fold (Griffin *et al.*, 2011), along with similar booms in markets in Brazil, China, France, Germany, and the United Kingdom (Shiller, 2005). In the United States, the boom was seen as a hallmark of the "new economy," in which service companies would replace the U.S.'s traditional manufacturing base. However, from 2000 to 2003, after moves by the U.S. Federal Reserve to withdraw liquidity from the market, stocks tumbled 40 percent, with the NASDAQ suffering an 80 percent drop (Kindleberger and Aliber, 2011).

Recently, the 2002 to 2007 bubble in real estate, and in some government bonds such as those of Greece, resulted in effects that continue to be felt today. In the United States, residential investment as a percent of GDP went from 4.2 percent in 1997 to 6.3 percent in 2005 (Akerlof and Shiller, 2009). During the same time, subprime mortgages, those to borrowers who historically have had difficulties making repayments, surged to represent over 20 percent of all mortgages (ibid.). A surge in home prices was not limited to the United States, with similar price increases in Australia, Great Britain, Iceland, Ireland, New Zealand, South Africa, and Spain (Kindleberger and Aliber, 2011). A rising wave of defaults that started in 2007 led to a bank run at Northern Rock in the United Kingdom and the collapse of several U.S. financial institutions such as Lehman Brothers and Washington Mutual. From 2006 to 2008, U.S. home prices decreased by over 20 percent, while prices in smaller countries such as Spain fell by over 30 percent, where prices showed little sign of recovery even seven years after their initial falls (Smyth and Urban, 2013).

While asset price bubbles in large, developed countries remain infrequent events, a particularly worrisome trend of the past few hundred years is asset prices becoming increasingly volatile and bubbles becoming more international in their growth—and collapse. Kindleberger and Aliber (2011, p. 1) note that "the years since the 1970s are unprecedented in terms of the volatility in the prices of commodities, currencies, real estate, and stocks." The authors also observe a pattern of international funds moving from country to country, and bubble to bubble, over the past thirty years. For example, many of the speculators during the Asian financial crisis were Japanese investors who could no longer realize significant returns in their home country, while many of the institutional investors who lost money during the tech bubble were also some of the hardest hit by the subprime mortgage crisis (Kindleberger and Aliber, 2011). Perhaps most worrisome is that these trends exist despite the creation of several institutions, such as central banks and the IMF, that are designed to analyze, manage, and prevent such events—not to mention countless studies by economists and other academics on the causes and consequences of these bubbles. This observation has incited many economists and policy makers to "reevaluate what they really know about asset bubbles" (Evanoff *et al.*, 2012, p. 1), with some going as far as to say that the "reputation of mainstream economics has been undermined" (Issing, 2009, p. 431). In the next section, I review the mainstream economic explanations of bubbles that are currently the subject of such debate and highlight some of the recent explanations offered from other fields such as behavioral economics, economic psychology, and sociology.

2.3 Theoretical explanations of asset bubbles

While extant literature has identified a wide range of factors that influence the growth and bursting of asset bubbles, such as the availability of credit (Kindleberger and Aliber, 2011), low interest rates (Issing, 2009), fraud (Akerlof and Shiller, 2009, Ch. 3), and herd behavior (Shiller, 2005, Ch. 9), there are very few comprehensive theories or theoretical approaches for understanding asset bubbles in their entirety. Over the past few decades, the dominant theory of asset pricing in mainstream economics has been one of market fundamentalism, which is based on the assumption that market participants make rational decisions based on an asset's fundamental value. However, in the wake of the 2008 market crash and increasing volatility in asset prices worldwide, this view has recently come under intense scrutiny. As a result, numerous scholars are now pointing to research from the fields of behavioral economics, behavioral finance, psychology, sociology, and organizational studies for superior explanations of the existence of asset bubbles. However, while these fields have certainly generated an abundance of insight on human and social behavior during bubble episodes,

their findings remain fragmented and overlook a critical aspect of all asset bubbles, that being the role of narratives.

Before explaining why narratives are so influential in determining asset prices during speculative events, in this section I outline the main theoretical contributions put forward from both within and outside the field of economics and discuss the limitations of these explanations.

2.3.1 Explanations from mainstream economics

In economics, the most pervasive "theory" invoked to understand the behavior of asset prices is one of market fundamentalism. Market fundamentalism is not a theory in the sense of a unified, distinct explanation of one phenomenon but is rather a set of interrelated ideas and assumptions about how markets work—enabling economists and policy makers to make predictions and propose solutions to various social problems such as inflation and unemployment. Market fundamentalism rests on the foundation of the efficient market hypothesis, which asserts that market participants make rational decisions based on an asset's fundamental value and thus asset prices always reflect their true value. This is essentially an extension of classical economic theory, such as the belief in free markets and the "invisible hand," ideas that continue to dominate most economic thought in capitalist societies. Thus, market fundamentalism is based on the assumptions that financial markets are the best means of pricing assets, free markets ensure money flows to investments with the highest return, and government regulation should be kept to a minimum to avoid interference with the market mechanism (Block, 1996).

Therefore, from a market fundamentalism standpoint, large fluctuations in asset prices are simply a reflection of significant changes in information about fundamentals. In other words, if using a fundamental value definition, bubbles cannot exist, as prices *always* reflect fundamentals. Proponents of this view argue that what appears to be a bubble is simply the observation of an asset's value being affected by large scale, exogenous "information shocks," such as the introduction of new government regulations or a new, perhaps poorly understood, technology. While this view recognizes that some investors may act irrationally, the theory contends that these investors are far outnumbered by sophisticated actors who quickly trade against irrational bets, thereby eliminating deviations from fundamental values (see, e.g., Fama, 1965).

As an example of this view, Garber (2000) argues that the commonly cited early bubbles in tulips, the South Sea Company, and the Mississippi Company were actually situations where prices reasonably reflected market fundamentals. The rapid rise and fall of tulip prices in the 1600s, he argues, is a standard feature of markets in newly developed varieties of rare bulbs. Garber adds that

most of the speculative trade in tulips took place in taverns under a fatalistic atmosphere brought on by the bubonic plague, which between 1634 and 1637 killed over 17,000 people in Amsterdam alone. That is to say, he sees the trade in tulips at that time as no more than an alcohol-infused drinking game where losing a significant portion of one's life savings was not the most pressing issue. Garber goes on to argue that the South Sea and Mississippi bubbles were merely the result of failed financial innovations, innovations that were supported by government officials at the highest levels in both Britain and France and thus justified the public's anticipation of higher share prices.

A similar argument is that when bubble episodes coincide with situations of high uncertainty, incredibly high valuations may be appropriate. For instance, Pástor and Veronesi (2006) argue that the high valuations given to start-up tech firms during the 1990s were justified on the basis that a firm's fundamental value should increase with uncertainty about its future profitability. As many of these start-ups were still in a period of building brand awareness, website traffic, and market share, the uncertainty surrounding these firms was extremely high and thus, these scholars argue, their observed valuations were within reason.

Aside from this strict adherence to market fundamentalism, other economists propose that bubbles can exist under the assumptions of efficient markets from four causes. First, markets may be constrained by frictions, such as short-sale restrictions (Miller, 1977; Palfrey and Wang, 2012; Scheinkman and Xiong, 2003) or capital constraints (Shleifer and Vishney, 1997) that prevent the market mechanism from working effectively. Second, rational speculators may drive a bubble's growth based on the expectations of selling the overvalued asset later at a higher price (Brunnermeier and Nagel, 2004; DeLong *et al.*, 1990; Doblas-Madrid, 2012; Flood and Hodrick, 1990). This explanation implies that speculators know the bubble will eventually burst but usually have sufficient influence on the market to time its collapse (Griffin *et al.*, 2011). Akerlof and coauthors (1993) illustrate this argument in their explanation of several financial crises in the 1980s, as, for example, they contend that outsiders and corporate "looters" likely coordinated actions in the 1980s to manipulate junk bond prices.

A third explanation argues that bubbles can emerge when investors systematically misvalue the fundamentals of an asset, which is referred to as an "intrinsic bubble" (Froot and Obstfeld, 1991). As an example, intrinsic bubbles may arguably arise in new products that at first appear promising but later disappoint due to technical flaws that cannot be overcome or a lack of complementary services that impede the product's adoption. A final explanation is that bubbles can occur under conditions of uncertainty when investors erroneously take external factors into account that have no impact on an asset's fundamental value, which is known as an "extrinsic bubble" or "sunspots"

(Azariades, 1998). For example, investors may adjust their valuations to economic forecasts that have little influence on the asset under consideration.

Throughout the second half of the twentieth century, most economists and policy makers adhered to the notion that the assumptions underlying market fundamentalism could sufficiently describe and predict most market behavior. As noted by Stracca in 2004 (p. 394), "Today, there seems to be almost a consensus that the market is most of the times rational." In addition, such an approach also appears adequate in explaining many smaller, isolated bubbles where factors such as capital constraints, market manipulation, and misevaluations play a large role. However, a market fundamentalist view of asset bubbles has come under intense scrutiny in recent years as asset prices have become increasingly volatile and bubbles have become increasingly international and destructive in their effects[3]. In fact, numerous studies of the past twenty years have shown that pure fundamentals and rationality do not drive financial decision-making and asset pricing, particularly during historic cases of large-scale bubbles (Akerlof and Shiller, 2009; Avery and Zemsky, 1998; Canterbery, 1999; Chancellor, 2000; Dale *et al.*, 2005; Griffin *et al.*, 2011; Kindleberger and Aliber, 2011; Lux, 1995; Perkins and Perkins, 1999; Shiller, 2005).

For instance, Griffin and colleagues (2011) conducted a detailed analysis of stock purchasing behavior during the tech bubble and found that sophisticated, institutional investors such as hedge funds and mutual funds were the most aggressive purchasers of technology stocks during the bubble's growth—even when those stocks demonstrated poor economic fundamentals such as price-to-sales (P/S) ratios. The authors also found that, despite no significant change in market fundamentals, these institutional investors were also the most aggressive sellers when the bubble burst, a period in which individual investors continued to buy. In studies on buying behavior during the South Sea Bubble, Dale and co-authors (2005) and Chancellor (2000) conclude that rational arguments based on fundamentals cannot explain the behavior of stock purchasers during this episode. These authors note that the South Sea Company was a relatively simple company with known cash flows and that there was plenty of public information showing how shares were extremely overvalued before the bubble burst.

From a more macro perspective, Akerlof and Shiller (2009, Ch. 11) demonstrate how stock market movements over the past 100 years cannot be explained by fundamentals, stressing that "no one can even explain why these events rationally ought to have happened even *after* they have

[3] As argued by Cooper (2008), the creation of central banks in order to deal with market instability is essentially an admission that markets are not efficient.

happened" (p. 131, emphasis in original). As a final example, Shiller (2005, Ch. 10) shows how, during bubble episodes, earnings growth and price growth do not correspond well at all.

In the aftermath of the global financial crisis of 2008, several notable economists such as Otmar Issing, President of the Center for Financial Studies in Frankfurt, and Benjamin Friedman, professor of political economics at Harvard, have called for a reevaluation of the efficient market hypothesis and other mainstream economic theories (Friedman, 2011; Issing, 2009). They argue that mainstream economic theories are unable to predict and explain large-scale bubbles and their associated crises, a failure that has damaged the public's trust in both mainstream economics and the free market system. In particular, the efficient market hypothesis has been criticized for "having supported an unfounded belief in the robustness of the financial system" (Issing, 2009, p. 431).

Critiques have also been made from outside mainstream economics, with numerous scholars arguing that most economists tend to almost completely ignore research from the other social sciences (e.g., Abolafia, 2010a; Armour, 2010; Block, 2010; De Bondt and Thaler, 1995). As a result, one area that is increasingly garnering attention is research on the role that irrational behavior plays in financial decision-making, research that falls under the broad fields of behavioral economics, behavioral finance, and economic psychology.

2.3.2 Explanations from behavioral economics, behavioral finance, and economic psychology

The fields of behavioral economics, behavioral finance, and economic psychology are, to a large extent, overlapping and are primarily concerned with the role of human psychology and social behavior in influencing financial decision-making. Within these fields, several scholars have investigated how irrational behavior can lead to the buying and selling patterns witnessed during bubble events.

In their seminal book on financial crises, Kindleberger and Aliber (2011, Ch. 3) document numerous historical examples of irrational purchases, lending, and speculation, emphasizing the influence of "group think" or "herd behavior" during bubble episodes (see also Galariotis *et al.*, 2015). The authors quote a banker during the South Sea Bubble as saying, "When the rest of the world are mad, we must imitate them in some measure," and Chuck Prince, chair of Citigroup in 2008, when he defended his company's actions during the subprime mortgage bubble with, "You have to keep dancing as long as the music is playing" (p. 43). Observations of herd behavior in financial decision-making have also been documented in numerous experiments (e.g., De Martino *et al.*, 2013; Hommes *et al.*, 2008; Hüsler *et al.*, 2013; Moinas and Pouget, 2013; Schoenberg and Haruvy, 2012).

For instance, Schoenberg and Haruvy (2012) found that traders are heavily influenced by their perceived performance relative to other traders, particularly when given information about high-performing peers. In their experiment, traders were much more aggressive in bidding up prices after learning that some of their peers had outperformed them in a previous round, causing prices to quickly surpass fundamental valuations. This experimental finding is supported by the historical analysis of Roy and Kemme (2012), who found that rising income inequality is likely to inflate asset bubbles. They surmise that rising income inequality results in a "keeping up with the Joneses" phenomenon in which people in lower income groups over-consume and over-borrow in efforts to emulate the habits of wealthier individuals.

In another experiment, Hommes and colleagues (2008) found that traders were highly prone to trend-chasing behavior, with participants much more likely to buy after a stock had successive gains and to sell after a stock had successive losses—again despite fundamental valuations suggesting they should act otherwise. De Martino and co-authors (2013) argue that this type of trend-chasing behavior is essentially hard-wired into our brains, with their neuroimaging experiment suggesting that during bubble episodes investors may be influenced more by their attempts to predict the behavior of other traders, known as theory of mind (ToM), than explicit information available in the market.

Scholars in these fields have also pointed to clear evidence of irrational "escalation of commitment" in financial markets (Staw, 1976), referring to situations in which financial decision makers choose to "throw good money after bad" (De Bondt and Thaler, 1995, p. 402) by continuing to invest in unprofitable ventures. Explanations for this phenomenon include the theory that decision makers, due to the emotional cost or humiliation of admitting failure, tend to have "confirmatory bias" and constantly look for evidence that supports their ideas (Rabin and Schrag, 1999). Eckel and Füllbrunn (2015) suggest that testosterone may be to blame. In their experiment, all-male markets consistently generated speculative bubbles, whereas all-female markets did not. In fact, their experimental all-female markets generated numerous negative bubbles, with prices remaining substantially below fundamental indicators.

Many scholars also argue that financial decision makers consistently demonstrate acts of clear hubris and overconfidence, particularly in areas where they have self-declared expertise (Heath and Tversky, 1991). As an example, despite numerous studies demonstrating negative returns for acquiring firms, corporate mergers and takeovers became increasingly popular in the 1980s. Roll (1986) contends that managerial hubris can explain the trend, arguing that managers of acquiring firms—partly due to their recent run of success—were convinced that they could run the target

firms better than current management and thus systematically overestimated the benefits of a takeover.

Hyman Minsky (1986, 1992), who was heavily influenced by the work of British economist John Maynard Keynes, argued that capitalist societies tend to develop states of collective overconfidence, which he referred to as states of euphoria. Minsky hypothesized that overconfidence is likely to arise during long periods of stability, periods that encourage more risk-taking and innovation. After periods of increased income, he argued, both lenders and investors are inspired to take on positions of increasingly greater risk, which invariably leads the economy into a vulnerable position in which a slowdown would immediately force a large number of investors to sell their assets in distress. Minsky saw this inevitable chain of events as the cause of financial crises and their resulting recessions.

While research from the fields of behavioral economics, behavioral finance, and economic psychology have produced a long list of insights—of which only some of the more influential have been mentioned here—into how irrational behavior may be partially responsible for the buying and selling patterns witnessed during euphoric bubble episodes, the findings from these fields remain highly fragmented and unable to offer a comprehensive explanation of bubble phenomena. Moreover, research from these fields tends to adopt an individualistic, reductionist view of market behavior, with many of the empirical findings in these fields resulting from highly controlled experiments (often with only undergraduate students as participants) that exclude exogenous influences such as institutional and regulatory constraints and incentives, historical trends, and broader social and cultural changes.

In the context of large-scale bubble episodes and their resulting financial crises, however, such a reductionist view is highly problematic, as these events have repeatedly proven to be highly complex phenomena that are deeply rooted in the prevailing political, social, and cultural ethos of their times. As an illustration, Galbraith (1954), in his seminal work on the 1929 stock market crash, notes "The striking thing about the stock market speculation of 1929 was not the massiveness of the participation. Rather, it was the way it became *central to the culture*" (p. 103, emphasis added). Galbraith goes on to document how stock market speculation became the common conversation topic of most gatherings, with countless housewives, doctors, and farmers all "becoming experts" in the market. He adds that common people became infatuated and absorbed by rising prices, while many decided market speculation was to become their full-time job.

After the recent crisis in 2008, many scholars, including economists, are pointing at other social phenomena as the primary contributor of the crisis, including distorted incentives at large-scale

institutions (Friedman, 2011), regulatory failure at the highest levels of government (Hirsch and Morris, 2010), and broad cultural changes occurring over several decades (Stein, 2011).

Concurrently, researchers are now recognizing the need to look beyond explanations of irrational behavior and focus more on how social factors can influence large-scale bubble events. Calls for research on the social aspects of these events are exemplified by Stracca (2004, p. 399, emphasis in original), who states, "In particular, to study how prices are determined in large competitive markets more recourse to *social*, rather than *individual* psychology might be warranted," and Shiller (2014), as he argues, "The question is not simply whether people are rational. It's about how best to describe their complex behavior." As a result, a small but growing number of researchers from the fields of sociology and organizational studies are starting to address the need for more socially situated explanations of asset bubbles[4].

2.3.3 Explanations from sociology and organizational studies

Despite asset bubbles and their resulting effects being highly relevant to the fields of sociology and organizational studies, or business studies in general, these events have received relatively little attention from these fields (Munir, 2011; Vaara and Durand, 2012). However, in recent years, particularly after the widespread damage resulting from the GFC, a small number of researchers have started to explore the social and cultural factors responsible for the crisis and similar speculative events.

A large percentage of studies in these fields see institutional and regulatory failures as the primary culprits in the recent housing bubble and its resulting financial crisis. Institutional explanations take the view that markets are embedded in institutions, which "stabilize, regulate, and legitimize economic activity" (McDermott, 2010, p. 315). Abolafia (2010a) is one of the strongest critics of contemporary institutions for their role in recent crises. He argues that the institutions of professional economics, the Federal Reserve, and political discourse all reinforce a market ideology based on market fundamentalism, an ideology he sees as poorly suited to prescribe a remedy for large-scale asset bubbles.

Other scholars have stressed the role of regulatory failure in the recent crisis (e.g., Campbell, 2010; Davis, 2010; Hirsch and Morris, 2010). Common to this view is the argument that, as speculative bubbles have increased in both their frequency and intensity over the past few decades,

[4] Of course, the fields of sociology and organizational studies do, from time to time, overlap with research from the fields of behavioral economics, behavioral finance, and economic psychology. Thus, my contrast of their findings is undoubtedly a slight exaggeration. However, broadly speaking, the differences between these two groupings hold true.

the dominant neoliberal ideology underpinning Western capitalism during this time is largely to blame. Such an assertion is hardly new, however, and echoes concerns of early economists such as Henry Carey (1864/2015), who vehemently argued that "instability is the essential characteristic of the system called free-trade" (p. 6). Similarly, a number of studies on the crises in developing economies in the 1990s point to inadequate regulation of financial institutions as a primary culprit (Kahler, 1998).

As an illustration of this view, Campbell (2010) blames a rash of neoliberal policies that started in the 1970s for the run-up in housing prices. He cites the 1970 repeal of a rule that prevented investment banks from going public on the New York Stock Exchange (NYSE) and the Commodity Futures Modernization Act (CFMA) of 2000 as two examples of policies that encouraged a large and unregulated shadow banking sector to take on risks that posed a threat to the entire economy. Campbell (2011) concludes that the market instability circa 2007 was created due to a preponderance of reinforcing institutions—those that generate similar incentives, in this case being incentives for increasingly risky mortgage borrowing—and a dearth of compensating institutions—those that make up for one another's deficiencies.

Other accounts of the largely self-regulated derivatives market of the 1990s and early 2000s have also singled out a lack of federal oversight as a key factor in the market's ability to take on such pervasive and ultimately systemic risk in just a few short years (e.g., Das, 2010; Engelen *et al.*, 2012; Tett, 2009). Davis (2010) argues that this process of deregulation, along with the securitization of numerous types of bonds, loans, and receivables, is evidence that the American economy has shifted to a finance-centered system that "ties the fate of households, businesses, and governments to the vagaries of financial markets" (p. 75). Hirsch and Morris (2010) seem to agree with such conclusions and add that deregulation has been sold to the public on the grounds that it is in the best interest of society, with capitalism shifting from a rights-based economic framework in the 1960s to today's profits-based economic framework. Hansen's (2014) work helps in understanding this shift. He documents how, in response to the Great Depression and two world wars, the middle of the twentieth century became a period of more rigorous financial regulation. However, after the stagflation of the 1970s, privatization and deregulation became the dominant rally calls of business leaders and policy makers alike.

Several scholars claim that this economic shift has coincided with an equally dramatic—and destructive—cultural shift. For instance, Perrow (2010) argues that the recent crisis was simply a result of greedy politicians, regulators, and executives who knew the dangers of their actions. Taking the argument one step further, Stein (2011) contends that Western countries have developed

a "manic culture" over the past twenty years, as witnessed by their consistent denial of large-scale threats, attitude of omnipotence over proper economic development, compelling need to be seen as superior to other states, and aggressive reaction to actors and systems that warn of impending crises. Consequently, he sees the culture of today's capitalist societies as directly responsible for the credit crisis.

2.3.4 The state of research on asset bubbles

So taking into consideration insights from both within and outside the fields of economics, where does research on asset bubbles stand? First, it is safe to say that explanations based on market fundamentalism are only sufficient in explaining some smaller, isolated asset bubbles, with most scholars now agreeing that theoretical accounts of asset bubbles must consider both irrational human behavior and the broader social context of these events. Second, findings from research on irrational behavior seem to agree that financial decision makers are highly influenced by their emotions, which causes them to make decisions based upon their performance relative to peers, recent trends and fads, their insecurities, and acts of overconfidence—all of which suggest that instances of "group think" or "herd behavior" are naturally occurring market phenomena.

In addition, overconfident, speculative behavior appears much more likely to occur during periods of relative stability, when confidence is already rather high and an ample number of high-achievers exist to be imitated. Lastly, nascent research on the social context of bubbles and their resulting crises suggests that market speculation is deeply rooted in the regulatory and institutional components of a society, with deregulation playing a large role in some of these events.

While all of these developments are useful in understanding why bubbles exist, most of the findings from these fields remain highly fragmented, with no clear, comprehensive framework for understanding asset bubbles in their entirety. Even more worrisome, most of these studies seem to indicate that—unless natural human behavior undergoes a radical, evolutionary transformation or the majority of countries decide to rethink the spread of our globalized, capitalist economic system—market speculation is here to stay. Even with the creation of various stabilizing mechanisms such as central banks, deposit insurance, and securities regulators, market fluctuations are likely to be a recurrent feature of our current economic system—thus warranting the development of more nuanced and comprehensive understandings of these events.

Perhaps most problematic is that extant research on asset bubbles fails to answer even some of the most basic questions concerning these events. First, and most important, current research offers no answer as to why some assets develop bubbles while others do not. For example, the 1990s in

the United States represented a relatively stable economic environment in which unemployment gradually lowered and household incomes gradually rose, conditions ripe for an increase in investment risk and financial innovation. However, as noted by Shiller (2005), there is no theoretical explanation as to why stocks would become the asset-of-choice, particularly after the 1987 market crash in which stock prices dropped by over 20 percent. Nor is there an explanation for why housing replaced stocks after 2000, especially when from 1900 to 2000 real home prices rose at the paltry rate of 0.2 percent per year (Shiller, 2005). Psychologists could argue that investors were chasing trends, but that merely begs the question of what made stocks or housing a trend in the first place.

A second oversight of current research is a lack of investigation into why bubbles cannot be "popped" or "deflated" before they grow large enough to result in widespread turmoil. In fact, there are numerous historical examples going back as far as the early 1800s of authorities attempting—unsuccessfully—to dampen the euphoria around speculative bubbles (Kindleberger and Aliber, 2011, pp. 88–90). For example, in 1825, Britain's Prime Minister George Canning, along with Lord Liverpool, Sir Francis Baring, and W. R. McCulloch, warned against excessive speculation in Latin America, speculation that included investments in the imaginary country of Poyais, only to watch the panic unfold nine months later. In February of 1929, eight months before the crash, prominent banker Paul Warburg, after a similar statement from the Chairman of the Federal Reserve Board, warned the American public that investment in stocks was eerily similar to that before the panic in 1907—again, to no avail. As a more recent example, Federal Reserve Chairman Alan Greenspan famously warned of "irrational exuberance" in the stock market in 1996, four years before the bubble popped. There surely must be some explanation as to why these warnings from such prominent actors resulted in little to no market correction.

I argue that it is not coincidental that these basic questions have gone unanswered while the role of narratives in these events has received very little theoretical attention. The importance of this oversight is due to my contention that *narratives and narrative thought play a critical role in market speculation and the formation of asset bubbles*. In the next section, I explain this argument in full.

2.4 The central (and largely overlooked) role of narratives in market speculation

In simple terms, a narrative is a cohesive story or account of events, experiences, or phenomena, whether true or fictitious. The idea of a story or account being "cohesive" refers to the concept of taking independent and disconnected elements of our complex existence and pulling them together

to create related parts of whole entities (Polkinghorne, 1988). As related to human thought and decision-making, scholars widely acknowledge that narratives play an integral role in our cognitive functioning.

Broadly speaking, there are two views, or modes as Bruner (1986, 1996) refers to them, of cognitive functioning. The first is the logico-scientific or paradigmatic view of thought, which sees the human brain as functioning similar to that of a computer's microprocessor: it makes quick, categorical calculations based upon clear, de-contextualized input data or proof and provides impartial decisions through tight analysis and proven theories of causation. Such a view is largely in line with most mainstream economic models, which assume that market actors possess extremely high computational capabilities and an unlimited timeframe in which to make those computations (Conlisk, 1996).

The second mode is one of narrative thinking, which, in contrast, sees the human brain as sensitive to aesthetics, associations, context, and good stories. In this mode, human thought is built upon concern for the human condition and primarily interested in the intentions of various actors, particularly the vicissitudes of these intentions (Bruner, 1986). While the goal of paradigmatic arguments is to convince the listener of their verifiable truth, the goal of narrative stories is simply to convince the listener of their lifelikeness, their verisimilitude. An important distinction here is that narrative thought is not to be viewed as simply irrational human behavior. Quite the contrary, narratives can be seen as a perfectly suitable, and often very complex, method of dealing with life's less technical issues, such as human interactions, group norms, and the like.

While the human brain can be thought of as able to easily alternate between the two modes, many scholars contend that narratives are in fact the basic organizing principle of all human cognition (Boland and Tenkasi, 1995) and communication (Fisher, 1985, 1989). Rather than take such an extreme view of these modes, I tend to agree with Bruner (1986) that these modes of cognitive functioning are complementary and thus irreducible to one another. However, in this thesis, I contend that periods of intense market speculation and asset bubble formation are fueled by narrative thought.

In particular, I see three primary reasons why narratives are so central to market speculation: first, asset bubbles typically form during periods of great uncertainty when investors have few past results to guide their decisions; second, asset bubbles tend to arise during euphoric periods of easy credit and loose regulations, conditions that attract a surge in (new) retail investors and copycat organizations; and three, today's globalized and high-speed investment environment, in which asset bubbles are increasing in size and frequency, provides endless investment opportunities and

information but limited time in which to make decisions. Below, I discuss each of these reasons in detail.

2.4.1 Uncertainty

In situations of great uncertainty, decision makers have less, or at least less reliable or relevant, historical data on which to base their decisions. As such, in these situations, making forecasts or predictions of future conditions and causal relations is all the more difficult. As demonstrated in this chapter, asset bubbles tend to form during periods of heightened uncertainty and multiple unknowns, which frequently arise from two conditions.

First, bubbles frequently form during periods of profound innovation, including financial innovation (Fostel and Geanakoplos, 2012; Morris, 1999), and product introduction. For instance, the dotcom bubble formed during widespread innovation in information technology and computing that gave rise to a host of new organizations and services, while also almost instantly affecting all other sectors of the economy. Even tulipomania was an instance of a recently introduced product, in this case rare tulip bulbs, which witnessed wild speculation amidst the uncertain spread of the plague. Hong, Scheinkman, and Xiong (2008) observe that speculative episodes in the U.S. have coincided with technological breakthroughs in railroads, electricity, automobiles, radio, microelectronics, personal computers (PCs), biotechnology, and the internet. Second, bubbles often form during the creation of new markets. The Southeast Asian crisis, in which hot money flowed into countries with very poorly understood risk profiles, and investment in the non-existent country of Poyais in the 1820s epitomize this category[5].

Thus, during periods of heightened uncertainty, decision makers, including investors, have no choice but to rely on narrative thought to guide their decision-making processes. Such a conclusion is supported by a wealth of studies in the broad field of narrative research. For example, one of the leading scholars on narratives and storytelling, David Boje (1991, p. 106) refers to storytelling as "the preferred sense-making currency," with numerous studies supporting the hypothesis that narratives are the primary tool used to makes sense of ambiguous situations (Abolafia, 2010b; Brown, 2004, 2005; Bruner, 1986; Hansen, 2012; Martens, Jennings, and Jennings, 2007; Weick, 1995; Zellermayer, 1997). Abolafia (2010b) demonstrates how narratives are even used by the Federal Reserve to make sense of complex conditions. In his study, in response to a situation in which money supply growth did not respond as expected to interest rate cuts, policy makers created

[5]An additional cause of uncertainty can simply be a lack of historical data on a certain country or particular asset class. For instance, Reinhart and Rogoff (2009) document how historical data on the issuance and default of domestic debt is (surprisingly) difficult to obtain.

a version of events that explained the phenomenon as a slower-than-expected response to cuts and adjusted their policy options accordingly. In direct relation to the dotcom bubble, Martens and colleagues (2007) found that entrepreneurial firms in the late 1990s constructed narratives in their initial public offering (IPO) prospectuses to convey a comprehensible identity for potential investors.

The reliance on narratives amidst great uncertainty is what Taleb (2007) refers to as "narrative fallacy," which he argues is our predilection for compact stories over raw truths, which leads us to think the world is less random than it truly is.

2.4.2 Expanding credit and deregulation

Moving on, narratives are also an essential component of market speculation because euphoric periods of expanding credit and deregulation entice numerous, often new, retail investors to enter the speculative frenzy, along with a number of copycat organizations that essentially mimic the bets made by first movers. The inclusion of a growing number of retail investors during speculative bouts is well documented and perhaps best represented by Galbraith's (1954) account of housewives, doctors, and farmers all becoming enamored with rising stock prices in the 1920s or Griffin and colleague's (2011) study that revealed the increasing presence of retail investors in the dotcom bubble during a period in which institutional investors were aggressively selling. While both of these bubble episodes attracted a large number of copycat organizations, the copycat phenomenon is perhaps best demonstrated in Gillian Tett's (2009) description of how innovations in credit derivatives spread like wildfire throughout the financial community circa 2002, creating what she calls a number of "perverted offspring" at numerous banks.

What makes the large presence of retail investors and copycat organizations so important is that these players rely much less on detailed or sophisticated analysis of market data and risk than institutional investors and first movers. To a large extent, these players are merely following the moves of what they see as more legitimate market players, with a large number simply hoping to ride the speculative wave—a phenomenon easily witnessed in any large-scale housing bubble.

So instead of relying on the detailed analysis of data, retail investors and copycat organizations use narratives to guide their decision-making. While these players are certainly producers of narratives in their own sense-making efforts, they are also consumers of narratives in that they rely on existing narratives in the market as a key source of information. That is to say, narratives also serve as a form of communication, as a *sense-giving* currency. Such an observation has been similarly made by Akerlof and Shiller (2009), who state, "stories do not merely *explain* the facts;

they are the facts" (p. 54, emphasis in original), and narrative scholar Torill Moen (2006), who contends, "not only are we continually producing narratives to order and structure our life experiences, we are also constantly being bombarded with narratives from the social world we live in" (p. 56).

The importance of narratives to retail investors and copycat organizations can also be inferred from numerous studies that have linked the advent of newspapers and media bias to the spread of speculative bubbles (e.g., Bhattacharya *et al.*, 2009; Hartz and Steger, 2010; Shiller, 2005). Even dating back to the 1700s, accounts reveal how John Law carefully released reports on the discovery of gold and silver mines in order to fuel speculative interest in the Mississippi Company (Bammer, 2002; Sheeran and Spain, 2004). Then, as news of fortunes being made in his scheme reached England, organizers of the South Sea Company, along with the British government, made every attempt to imitate Law's techniques (ibid.).

2.4.3 Global investment environment

Lastly, today's internationalized, high-speed investment environment, the environment in which asset bubbles are increasing in both size and frequency, makes narratives highly influential—on a global scale[6]. The influence of narratives in such an environment stems from the fact that investors have seemingly endless investment opportunities and information on which to base their decisions but limited time in which to make these decisions. The increasing internationalization of investment options is a well acknowledged trend of the past fifty years and is clearly demonstrated by tales of the recent housing bubble in which, for example, suburban school districts in Minneapolis were investing in off-balance sheet, structured investment vehicles (SIV) in Düsseldorf, Germany (Tett, 2009, p. 175). Also widely known, today's computer-based trading systems require faster, almost instant in some cases, decision-making. Over ten years ago, Oberlechner and Hocking noted in their study of trading activities (2004, p. 421), "new trading and information technologies…are demanding faster decisions and leave less time for mindful thinking and processing of information."

In an environment with endless choices and limited time in which to make decisions, the role of narratives can quickly trump that of logico-scientific thought. This is simply because narratives are so effective at attracting our attention and, by doing so, both limit and guide our decision-making. Stories and narratives attract our attention because they do not merely list or present facts but rather

[6] That is not to say that the current environment is the *only* period of internationalized investment. Further supporting the claim that periods of internationalized investment correspond with asset bubbles, Reinhart and Rogoff's (2013) large-scale study revealed that, since 1800, "periods of high international capital mobility have repeatedly produced international banking crises" (p. 155).

they represent facts in an elegant and artistic way (Smith and Anderson, 2004). Through their cohesiveness and artistry, narratives are more easily learned and remembered than raw data or information (Shaw, Brown, and Bromiley, 1998), which allows narratives to spread quickly, especially to non-professional investors.

Looking back at some of the largest bubbles of the past hundred years, it is easy to identify this artistry and appeal. For instance, one of the fastest-selling books of the 1980s was Ezra Vogel's (1979) "Japan as Number One: Lessons for America," while the 1990s gave rise to the "Asian economic miracle," led by the "four Asian tigers" of Hong Kong, Singapore, South Korea, and Taiwan. Larger, economy-wide narratives also make smaller, individual company or project narratives much more appealing and believable. For example, it is doubtful that Enron's announcement that it would be creating markets in bandwidth trading would have generated such excitement without the world believing that developed nations were entering a new, service-based economy driven by information technology.

2.4.4 Discussion

Unfortunately, despite the influential role of narratives in market speculation, narrative studies on these events remain sparse, with many existing studies only indirectly investigating this relationship. For example, Hartz and Steger's (2010) study is directly concerned with corporate governance in the late 1990s, but their narrative analysis also provides insight into broader social trends during the dotcom bubble. Similarly, Martens and co-authors (2007) explore the relationship between IPO narratives and resource acquisition, a study that indirectly provides insight into sense making during the dotcom bubble. Other authors and studies have noted a clear link between news, stories, or rhetoric and the emergence of asset bubbles (e.g., Akerlof and Shiller, 2009; Bhattacharya *et al.*, 2009; Hansen, 2014; Shiller, 2005), while some scholars have even made direct appeals for discursive research on such events (e.g., Munir, 2011).

Strongly supporting the need for such research is Roy and Kemme's (2012) historical study of banking crises, in which they conclude, "Bubbles, while perhaps initiated by changing economic fundamentals, can very well build up over a length of time *only* due to popular stories and self-fulfilling expectations about indefinite future increases in asset prices" (p. 292, emphasis in original). However, aside from the knowledge that a vital link exists and a handful of anecdotal examples of this link, we still lack any deep theoretical development on the role that narratives play in asset bubbles.

To summarize, in this chapter I have demonstrated how common and destructive asset bubbles have become. Due to these factors, asset bubbles have received unprecedented attention in recent years and have been the subject of numerous studies from a range of academic disciplines. However, despite these efforts, many scholars still feel as though we know so very little about these speculative events. In this last section, I have argued that narratives and narrative thought play a crucial role in financial decision-making during speculative bouts. Somewhat surprisingly though, narratives have received very little scholarly attention in their relation to asset bubble formation. Thus, in order to make substantial progress towards better understanding asset bubbles, we need to develop a much more nuanced and in-depth understanding of the precise role that narratives play during these events. This observation serves as the primary motivation behind this thesis.

In the next chapter, I build on the above discussions of narratives and their role in market speculation and develop a novel, institutionalized narrative (I/N) perspective by which scholars can further explore the relationship between narratives and asset bubbles. The I/N perspective then serves as a sensitizing framework for a multi-staged empirical study, the findings of which are reported in Chapters 5 through 9 of this thesis. In Chapter 10, I draw on these findings and outline a narrative theory of asset bubble formation.

CHAPTER 3: DEVELOPING AN INSTITUTIONALIZED NARRATIVE (I/N) PERSPECTIVE OF ASSET BUBBLES

In this chapter, I outline an alternative perspective of asset bubbles, one that gives prominence to the role that narratives play in the emergence, development, and growth of asset bubbles. In particular, this perspective highlights the eventual institutionalization of these narratives and thus serves as a useful sensitizing framework to help uncover how certain narratives become taken-for-granted and deeply embedded in our economic, social, and cultural institutions. I refer to this perspective as an institutionalized narrative (I/N) perspective of asset bubbles.

The I/N perspective developed in this chapter serves as the foundation of a multi-staged empirical study that is presented in this thesis and thus at this point should only be seen as a research lens, as opposed to a formal theory of cause and effect. In Chapter 10, I combine insights from my empirical findings with the assumptions of the I/N perspective to generate theoretical propositions about the causes of, and possible solutions for, asset bubbles.

In this chapter, I first provide some background on how the concept of narrative is used in academic studies and explain how the concept is specifically employed in this thesis. I then provide a brief overview of institutional theory, its various streams of literature, and how it is applied in the I/N perspective. In the following two sections I outline the I/N perspective, clarify its processual orientation, and explain its theoretical underpinnings. I conclude the chapter by developing the two principal research questions of this thesis.

3.1 Narrative research

As the term "narrative" is a relatively common and thus broadly defined concept, it has been applied in a variety of contexts and forms within the academic community. For instance, Genette (1980) notes that narrative can refer to a written or spoken statement, the story or events that make up the narrative, or even the act of narrating. An often sticky issue is whether, and to what degree, a narrative differs from a mere story. Frequently, the terms are used synonymously (Moen, 2006). However, numerous scholars argue that narratives differ in that they must include an element of causality or plot whereas stories need only chronologically recount a chain of events (Randall, 1995; Tsoukas and Hatch, 2001). While this distinction is not universally agreed upon, there does appear to be widespread agreement that a narrative is a form of retrospective sense-making. That is to say, narratives are not written in advance of events as would a script, plan, or strategy, but rather they are a very natural way of recounting experiences and creating order out of the seemingly endless—and at times chaotic—sequences of events in the human world (Tsoukas and Hatch, 2001).

Narrative research aims to offer a unique and arguably necessary lens through which to study human relations. Narrative studies are unique in that they take into account how the above-mentioned statements, stories, and plots are produced and circulated amongst communities, thus providing us with a nuanced view of how small groups, organizations, societies, nations, and even the human race as a whole come to understand their natural and socially constructed worlds. Providing even more novelty, narrative techniques allow researchers to take into account both context (Moen, 2006) and non-human agents (Cooren, 1999).

As narratives are a primary sense-making tool, context is always present, and this context and the stories produced within are frequently pervaded by a range of non-human agents such as contracts, rules, objects, procedures, and instruments that we interact with in very important ways. As argued by Cooren (1999), non-humans play a vital role in mobilizing human agents. For instance, contracts and rules direct employees to act in certain ways, while computers and instruments enable and constrain individuals in their daily actions. As these agents are largely ignored by other research methods (Cooren, 1999), their inclusion in narrative studies provides a unique glimpse into their role in the social construction of our worlds. Also somewhat unique to narrative research is the inclusion of temporal issues as an object and context of study. In this sense, narrative studies are able to locate observations and meaning in time as opposed to methods that ignore the importance of chronology or merely assume that observations are logically valid at all times (Czarniawska, 1997).

The necessity of narrative studies can be traced to numerous observations of the omnipresent nature of narratives in human societies (Moen, 2006; Rhodes and Brown, 2005). According to this view, narratives are the fundamental means by which communities produce and spread common understandings—thus allowing these communities to function, grow, and prosper. According to Polkinghorne (1988), on an individual level, people without narratives simply do not exist. Hence, if our research efforts fail to acknowledge and investigate the role that narratives play in constructing our social worlds, we would accordingly be overlooking the primary method by which these worlds are created.

Aside from the claim that narratives are our central sense-making mechanism, narrative research generally rests on a few common assumptions. As alluded to above, a first assumption is that narratives are essentially a communal activity. In other words, narratives are not created, maintained, elaborated upon, and edited by individuals acting in isolation, but rather they are constructed by communities, with some narratives eventually becoming institutionalized in society (a point that will be elaborated upon more fully in the following sections). As a result, various narratives become

a factual reality that we live amongst and interact with (Cooren, 1999; Fisher, 1985). As these stories are produced by human actors, a further assumption is that these stories are deeply infused with human experiences, values, audiences, and the like (Moen, 2006). Additionally, as these stories are produced by communities, they are also assumed to encode a form of "multivoicedness"—meaning that in a very deep and complex manner, narratives carry the voices of numerous actors, both past and present.

As narratives are a sense-making mechanism infused with human thoughts and emotions, they are inevitably interpretations. Thus, a challenge for narrative research is that when scholars are interpreting narratives, they are ultimately interpreting interpretations. However, such a challenge is far from being unique to narrative methods. A final assumption related to this point is that, due to narratives being omnipresent and thus seemingly endless in number and variety, no "true" or "correct" narrative exists. That is not to say that some narratives cannot be more powerful or dominant than others (another point that will soon be elaborated upon), but researchers commonly refrain from interpreting narratives as factual, objective statements.

A major strength of narrative studies is that they allow phenomena to be investigated in their given social, cultural, and institutional contexts (Moen, 2006). As argued by Tsoukas and Hatch (2001, p. 998), this aspect of narrative methods allows for "a more concrete rendering of causality." With context ever present, narrative enquiries are thus historically located and specifically applicable. Tsoukas and Hatch (2001) stress that such a strength enables narrative studies to capture the complexity inherent in many organizational settings.

In spite of these numerous novelties and strengths, however, narrative studies do have a few common drawbacks. Foremost amongst these is the subjectivity inherent in narrative analysis. This subjectivity can result from a number of factors, such as the researcher's (or research team's) experience and training, the researcher's background and worldview, or simply the degree of ambiguity found in any given text. While such a critique has been repeatedly voiced over qualitative methods in general (Creswell, 1998; Krathwohl, 1998; Miles and Huberman, 1994), even narrative scholars acknowledge an "ongoing tension between stories and science" (Rhodes and Brown, 2005, p. 167). Perhaps adding to this tension is the multifaceted nature of narrative studies. Similar to the broad treatment of the term narrative, a narrative approach can be viewed as a method of inquiry, a set of specific methods, a form of data, a frame of reference, and even an entire paradigm (Fisher, 1989; Moen, 2006; Reissman, 1993). Such a variety of applications has led to some confusion over what a narrative study should and should not entail. But perhaps spinning this observation more

positively, such a variety has also resulted in a number of highly innovative and customized research projects that would not have been possible if everyone followed a set of rigid guidelines.

The concept of narrative has been previously applied in the field of economics, albeit sparingly (Dumez and Jeunemaitre, 2006). In general, many of these studies equate narrative with a form of event sequence. For instance, Monnet (2014) follows Romer and Romer's (1989) narrative approach by examining archival meeting minutes of French policymakers. Monnet views the narrative of each policy period as the intentions of and decisions made by policymakers. Such a treatment of narrative is similar to Paul David's (1985) classic study on the history of QWERTY, in which he used a historical storytelling of the QWERTY keyboard design to legitimize the concept of path dependence. While these applications of a narrative concept are certainly useful, they are also purely descriptive studies that are prone to what Dumez and Jeunemaitre (2006, p. 34) refer to as "partial description." Pentland (1999) offers a further critique of such studies, claiming that by focusing almost solely on event sequences, researchers are excluding the very features needed to create explanations.

Another common treatment of narrative in economics is equating the term to an argument or theory that explains a causal relationship. For example, Jonakin (2012) analyzed the narratives that economists used to explain away the necessity of free migration amidst a policy environment of liberalization and free trade. This treatment is similar to DiMaggio's (1995) view that theories are essentially stories that describe the processes that connect cause and effect. While I cannot disagree that theories are essentially narrative in form, such a simplistic treatment of the term narrative provides very little, if any, novelty or insight to a researcher's existing conceptual and methodological toolkit. Moreover, a simplistic treatment of narrative hardly allows for any systematic study or comparison, which is the ultimate goal of most research.

In light of the limitations of interpreting a narrative as an event sequence, argument, or theory, this thesis employs a much more structured narrative form. Specifically, this thesis employs the narrative form identified by Fiol (1989), Pentland (1999), and Hartz and Steger (2010), who follow the classic narrative theories set forth by Russian Formalists such as Propp (1958). The choice of this form, aside from its popularity amongst scholars of numerous disciplines, lies in its simple yet well-structured architecture, a feature that enables a systematic and thorough investigation of almost any text. As a result, the empirical study presented in this thesis should be both thorough enough to support its findings and structured enough to allow for comparative studies by other scholars.

According to this form, narratives contain three essential elements: a narrative subject, a destinator, and a set of enabling or impeding forces. The narrative subject refers to the "focal

actor(s)" (Pentland, 1999) of the narrative. Equivalent terms for such a role include hero and protagonist, which are actors that "along with sequence, …provide a thread that ties the events in a narrative together" (Pentland, 1999, p. 712). While the narrative subject is often a person, the term can be used rather loosely and, for example, refer to companies (Martens *et al.*, 2007) or the entire economy (Hartz and Steger, 2010). Fiol (1989) notes that the subject is always seeking an object, which is the "ultimate goal that the subject is in search of" (Martens *et al.*, 2007, p. 1109).

A destinator, also referred to as a sender, is "an extratextual force, the source of the subject's ideology" (Fiol, 1989, p. 279). This element refers to the broader economic, social, and cultural context within which the subjects of a narrative are operating (Fiol, 1989). In this sense, a destinator is similar to what Pentland (1999) identifies as the "canonical" or evaluative frame of reference, which he sees as including "standards against which actions of the characters can be judged" or "a sense of what is right and wrong, appropriate or inappropriate" (p. 713). Through the destinator, we are able to learn about the values of a particular cultural group at a specific point in time and infer how culture guides actions (Pentland, 1999).

For example, in their study of corporate governance in Germany, Hartz and Steger (2010) identify the "invisible hand" as the sender when the economy was expanding and the "moral needs of economy" as the sender when the economy was contracting. Thus, when the German economy was expanding in the late 1990s, corporate governance was justified as being relatively amoral and focusing on traditional measures of profit and growth. In contrast, as growth tapered off and accounts of large and, in some industries, systemic fraud were increasingly reported in the German media, the Germany public started to demand more honest corporate behavior and stable corporate results. Consequently, corporate governance was now viewed as one of the primary mechanisms by which to monitor the morality and long-term stability of a company's affairs.

Lastly, enabling and impeding forces refer to any of a wide variety of forces that either help or hinder the subject in acquiring their desired object (Fiol, 1989). For instance, enabling forces can include capital market structures and close relationships with vendors, while impeding forces can include public greed and old-fashioned, out-dated modes of thought (Hartz and Steger, 2010; Martens *et al.*, 2007). As evident from these examples, enabling and impeding forces need not be actors in the traditional sense (Fiol, 1989).

Ultimately, a narrative is fully present when an implicit or explicit sequencing of events (Barry and Elmes, 1997; Czarniawska, 1998), or plot, arises in which a narrative subject seeks to acquire an object under the context of a certain destinator and being both (either) aided and (or) impeded by other forces. To the reader or listener, these narratives can possess various tonalities, which refers to

the connotation of the story as positive or negative (in other words, determining whether the subject is judged in a positive or negative manner) (Fiol, 1989). While other features can certainly be added to narrative analysis and increase the overall accuracy of the narrative in question, such additions usually come at the cost of simplicity and generality (Pentland, 1999). Moreover, adding excessive features greatly increases the risk of a researcher "forcing" a text into a given narrative structure, thereby reducing the reliability of the analytical process.

3.2 Institutional theory

The second cornerstone of the I/N perspective is its grounding in institutional theory. Institutions are socially constructed, established rules and conventions that govern our collective thoughts, intentions, and behaviors (Berger and Luckmann, 1966; Cornelissen *et al.*, 2015; Searle, 1995). These rules and conventions are both formal and informal and include, for instance, regulations, laws, norms, beliefs, taboos, and sanctions (North, 1991; Scott, 1995). Institutions are the very context in which individuals think, speak, and act (Schmidt, 2008). However, institutions are not only external to individual agents, for institutions are created, negotiated, maintained, and torn down by the thoughts, words, and actions of those same agents. In this sense, institutions are also internal to individuals and thus context can never be detached from the agents that operate in it.

Institutions are thus quite distinct from organizations (North, 1991). While organizations represent groups of individuals with a common purpose, institutions operate at a higher level. They are our shared cultural systems (Schneiberg and Clemens, 2006), the taken-for-granted "facts," organizational forms, and practices that define what is acceptable and appropriate in any given setting (DiMaggio and Zukin, 1990). As such, institutions provide a context—a frame of action—in which organizations emerge, operate, compete, and thrive. Institutions define reality for both individuals and organizations, providing stability and meaning to our social worlds (Meyer and Rowan, 1977; Scott, 1995).

As they define our social worlds, institutions are pervasive, affecting individuals, groups, and organizations in all modern societies (Berger and Luckmann, 1966; North, 1991; Searle, 1995). As they define what is acceptable and appropriate, institutions play a powerful role in influencing behavior as they constrain, facilitate, and reward various behaviors (Campbell, 2007). North (1991) argues that institutions are what make trade, or least the gains from trade, possible. He reasons that without institutions, transaction and production costs would make it uneconomic to swap with foreign, unknown parties. In a similar vein, Phillips and coauthors (2004, pp. 637–638) review how departures from institutional norms are costly, for these departures involve extra risk, are time-

consuming, and are cognitively and physically much more difficult than the status quo. Hence, institutions compel both individuals and organizations to seek legitimacy and social conformity. As such, institutional norms become self-policing systems of social control (Douglas, 1986).

The theory underlying the study of institutions, institutional theory, incorporates an overlapping and eclectic stream of research. A small sample of this stream includes research on institutional myths (Meyer and Rowan, 1977; Zilber, 2006), institutional logics (Ocasio, Loewenstein, and Nigam, 2015), discursive institutionalism (Schmidt, 2008), various forms of institutionalization and deinstitutionalization (Ahmadjian and Robinson, 2001; Maguire and Hardy, 2009; Zajac and Westphal, 2004), and critical institutionalism (Peukert, 2010). Generally speaking, these examples are forms of "neo-institutionalism," which adopts a culturally-based, sociological view of institutions, that can be contrasted with "new institutionalism," which is derived from economic and political science theory and is frequently grounded in assumptions of rational thought and utility maximization (for further explanation and clarification, see Schneiberg and Clemens, 2006).

A neo-institutionalist perspective, as is applied in this thesis, seeks to understand and explain how individual and collective cognition are related to the macrolevel features of institutions (DiMaggio, 1997). Neo-institutionalist studies strive to identify and probe shared thought structures that constitute legitimate ways of acting in various social settings (Cornelissen *et al.*, 2015; Schneiberg and Clemens, 2006). Thus, such studies attempt to explain the endurance of and change in institutions, which in turn provides us with a better understanding of how individual action is derived from shared cultural systems.

Given these features, neo-institutional theory is seen as a strong response to the overemphasis in many strands of research on individual agency and a neglect of societal structures and context (Schmidt, 2008). As argued for in this thesis, institutional theory rejects the reductionism that is commonly found in behaviorist and microeconomic theories and allows (in the view of some, requires) researchers to link different levels of analysis (Schneiberg and Clemens, 2006).

One of the most commonly studied aspects of institutional reality is institutionalization, which can be described as a process by which "structures, policies, and practices acquire social legitimacy and ultimately become taken-for-granted as normatively appropriate in a population" (Zajac and Westphal, 2004, p. 433). In other words, institutionalized practices are those that are deeply embedded in our society, practices that move from "This is one way of doing something" to "This is how we *always* do something," "This is how something *should* be done," or "This is how something *must* be done." Such practices ultimately take on a rulelike status in social thought (Meyer and Rowan, 1977).

Studies of institutionalization investigate how meanings spread, diffuse, and are negotiated and reshaped over time (Zilber, 2006). That is to say, institutionalization cannot be seen as a simplistic process by which one idea or practice becomes uniformly adopted throughout a society. Rather, institutionalization is viewed as a rather complex process in which practices are constantly being understood, interpreted, and reproduced—often with slight variations—by a diverse range of actors in a diverse set of social conditions. As can be inferred, institutionalization is acknowledged to be a political process where actors with more power yield greater influence on institutionalized acts (Lawrence, Leca, and Zilber, 2013; Riaz, Buchanan, and Bapuji, 2011; Rojas, 2010).

The "taken-for-granted" aspect of institutionalized practices can be demonstrated in a number of ways but is commonly understood as an absence of discussion on a certain practice (Schneiberg and Clemens, 2006). Hence, once an idea or rule acquires widespread legitimacy, people simply stop fighting over it and debate largely ceases (ibid.). That is not to say that institutionalized acts are always, or even usually, the "best" way to do something. In an institutional sense, what is viewed as appropriate in any given social setting is not based solely on individual cognition and careful deliberation but rather follows from cognitive scripts that are readily shared across society (DiMaggio, 1997).

Scott (1995) distinguishes three aspects or "pillars" of institutionalization—the cognitive, normative, and regulative—that establish legitimacy and secure conformity to various practices. The cognitive pillar defines the prevailing orthodoxy (Scott, 1995), under which conformity becomes automatic and even unconscious as cultural support leads to practices being unquestioned (Hoffman, 1999). Deviance from the cognitive pillar is often met with a lack of comprehension, and alternatives are treated as irrational (Schneiberg and Clemens, 2006). The normative pillar refers to values and norms that result from social expectations and moral obligations (Scott, 1995). This pillar defines what is appropriate or expected in social situations (Wicks, 2001) and thus plays a large role in influencing behavior and producing conformity (Caronna, 2004). Alternatives to the normative pillar are viewed as dangerous, while deviance—although legal—is still punished as a violation of taboo (Schneiberg and Clemens, 2006).

Lastly, the regulative pillar refers to established rules and laws that coerce and constrain certain actions and behaviors (Caronna, 2004). As actors seek to avoid penalties associated with non-compliance, regulatory acts can be very powerful forces of institutionalization (Hoffman, 1999). While each pillar is known to be informative and influential on its own, the three pillars are now generally understood to be overlapping as, for example, regulative policies tend to incorporate both

cognitive and normative ideas (Schmidt, 2008). Despite this overlap, however, each pillar can potentially become dominant over the others (Hoffman, 1999).

Of late, this focus on institutionalization has morphed into broader institutional processes, including processes of deinstitutionalization and institutional change. While the concepts are similar and overlapping in many cases, deinstitutionalization refers to the process by which previously institutionalized practices are abandoned (Ahmadjian and Robinson, 2001; Davis, Diekmann, and Tinsley, 1994; Maguire and Hardy, 2009), while institutional change refers to the process by which one institution is replaced by another (Colomy, 1998; Ocasio *et al.*, 2015). These studies are based on the common assumption that institutions are always under threat (Oliver, 1992), for institutional acts and practices are repeatedly subject to variation, conflict, deviance, and debate (Schneiberg and Clemens, 2006).

Due to such pressures, institutions require maintenance in order to resist change (Martí and Fernández, 2013; Micelotta and Washington, 2013; Zucker, 1977). Shifting circumstances can further undermine the hegemony of existing institutions (Schneiberg and Clemens, 2006, p. 218), while marginalized actors—often the source of "institutional entrepreneurs" (Colomy, 1998)—seek to instigate change by introducing counter narratives and organizing social movements (Schneiberg and Clemens, 2006). Such dynamics serve as further evidence of the complexity and dynamism of institutional reality.

3.3 The institutionalized narrative (I/N) perspective of asset bubbles

In this section, I illustrate how the above concepts of narratives and institutional theory are combined to create an institutionalized narrative (I/N) perspective of asset bubble formation. This perspective then guides the empirical component of this thesis.

The I/N perspective of asset bubbles views bubbles as emerging through the creation of a boom narrative, as developing through the formation of a collective boom narrative, and as growing through the institutionalization of that narrative. Below, I discuss and illustrate each of these three stages. Again, it should be noted that the following is not "proof" of a theory of causation but rather the development of a research lens and sensitizing mechanism that should enable detailed and provocative narrative studies on these events. Thus, instead of proposing a theory for empirical testing, this section develops a framework that can guide the collection and analysis of data and can then be used to create a dialectics with those results.

That being said, the features and focus of the I/N perspective are supported by a wealth of historical and scholarly evidence (as discussed in the previous chapter). In other words, the I/N perspective may also be understood as a translation of historical and scholarly accounts of asset bubbles into narrative and institutional language.

3.3.1 The creation of a boom narrative

Under this perspective, the first stage of a bubble can be understood as an innocuous, but still dynamic, state of competing narratives. In this stage, an asset is subject to several well-cited narrative interpretations, each with its own unique account of various facts, figures, events, and so on. Just as an organization can be understood as a multiplicity of different stories (Boje, 1995; Cooren, 1999), many assets are associated with such a wealth of information and variance of opinion that there can seem to be almost as many narratives as there are investors. Thus, while some investors may view the asset as capable of providing steady returns, an equally large number of investors may view the same asset as risky with little potential for large-scale growth. Such a state is likely for assets that have yet to receive much attention in the media or elsewhere, such as stocks in young, relatively unknown companies. In this stage, for there to be any chance of a bubble eventually growing, one of the narratives to emerge must be one that leads investors to expect significant capital gains, which will be referred to as a *boom narrative*.

For example, a narrative may emerge that sees housing in downtown Los Angeles (narrative subject) as a great investment (meaning it will be subject to increased demand and capital gains, its object or ultimate goal) due to factors such as increased migration, a boom in the entertainment industry, and the likelihood of strict government controls of nearby land development (enabling forces). At this stage, however, large rises in LA home prices are unlikely as a large number of potential investors still view LA housing as risky, destined to drop in value, or only likely to provide incremental returns through rent. In contrast to the boom narrative above, these views are supported by the observation of a number of impeding forces, such as low growth in the per capita income of LA residents, strict mortgage down payment requirements, or increased inner city crime driving wealthier residents into the suburbs.

3.3.2 Formation of a collective boom narrative

The second stage of a bubble can be understood as a slightly more dangerous stage in which one of the narratives concerning an individual asset becomes widely shared amongst a significantly large group of investors. In this stage, potentially due to the overall connectedness of a community

(Boyce, 1995) along with the aesthetic appeal of the narrative (Taylor, Fisher, and Dufresne, 2002), one of the narratives becomes dominant while others are marginalized (Boje, 1995). As such, a large percentage of investors will view the asset in a similar manner and fluctuations in the asset's price in response to various events or news will become more predictable. For instance, a stock (subject) may be referred to as a "blue chip stock" by a large group of investors, meaning they expect steady, reliable returns (object) due to the company's experience, size, and reputation (enabling forces). As a result, individual news items about the company can now be easily interpreted against the backdrop of a blue chip narrative.

Of course, what is dangerous about this stage is the possibility of a boom narrative becoming shared by a large group of investors, which will be referred to as a *collective boom narrative*. When this happens, an asset's price is very likely to rise beyond previous expectations due to the large number of investors who act upon the belief that the asset will generate significant capital gains.

Returning to the LA example, at this stage a large group of property developers may start to enthusiastically bid up prices of land sales in the area, all with the same prediction that home prices will rise substantially in five years' time when construction is complete. However, at this stage, while downtown LA may undergo a small or brief real estate bubble, a large-scale nationwide housing bubble is unlikely to develop. This is because 1) a significant number of investors still do not share the same boom narrative and instead retain their competing narratives, thus keeping price gains somewhat muted, even in LA; 2) the narrative still needs to be translated to contexts outside of LA, which may not be experiencing commercial booms or subject to strict land controls; 3) the narrative is still open to critique in light of any new information; and 4) the narrative is still confined to a (largely) professional community of investors, limiting its spread.

3.3.3 Institutionalization of a boom narrative

The final, most dangerous, stage of an asset bubble is one in which a collective narrative becomes institutionalized. Relevant to this perspective, a narrative becomes institutionalized when it moves from an interpretation of an asset to the context of an asset—in narrative terms, becoming a destinator. For example, stocks listed on the Dow Jones are not interpreted as blue-chip stocks—they *are* blue-chip stocks. While the debate of how blue-chip stocks in general are going to perform this year is still open for debate, the categorization of stocks on the Dow Jones as blue-chip stocks is essentially closed for debate. Therefore, when a stock is listed on the Dow Jones, it immediately becomes easier to interpret, analyze, communicate, and sell—especially to non-professional investors.

One can easily translate these implications to the situation in which a collective boom narrative becomes institutionalized, referred to here as an *institutionalized boom narrative*. When a boom narrative becomes institutionalized, the belief that a certain asset will achieve significant capital gains becomes broadly accepted as socially legitimate and normatively appropriate. During such a process, the narrative is likely to undergo what Earl, Peng, and Potts (2007) refer to as decision-rule cascades, meaning the rule or reason for making a decision becomes increasingly simplified as it spreads throughout society, losing the details and qualifications once regarded as central to the rule. As a result of this simplification, the narrative can now transcend specific situations and be applied much more broadly than its original form or intention—thus fueling its reproduction (Ocasio *et al.*, 2015).

Returning one last time to the LA housing example, at this stage the narrative that "Home prices will go up in LA due to reasons a, b, and c" becomes "Home prices (in general) always go up", "Home prices should go up" (meaning it is good for the economy and home owners), and/or "Home prices must go up" (meaning the government should intervene if prices drop, for a drop in home prices will severely damage economic activity). When such a transition happens, one can easily see how 1) competing narratives about homes as an investment will either be ignored or quickly rebutted, for competing narratives seem to argue in favor of damaging the economy and hurting home owners; 2) the narrative need not be translated (in any great detail) to any specific context; 3) the narrative is no longer open to critique, for the logical reasoning behind it has disappeared; and 4) in its simplified form, the narrative can easily spread to the non-professional investment community. In such a context, a rapid, nationwide rise in home prices becomes a very real possibility.

3.3.4 Discussion

A relevant question that arises here is how to define an asset bubble under the I/N perspective. Two points can be made, which leads us to the answer. First, the simple existence of a boom narrative certainly does not constitute an asset bubble. While this narrative may lead a handful of investors to aggressively bid for a certain asset, the existence of numerous other popular narratives mutes or cancels out any rapid rise in the asset's value. Only in a limited number of situations could one or a few investors significantly alter the price of an asset. For example, the prices of certain one-of-a-kind memorabilia, landmarks, and even brands can rise dramatically due to the whims of one or a few investors. However, these situations are akin to the price swings in fashion accessories offered in Chapter 2 and are far from the types of wild price fluctuations that concern policy makers. Second, a collective boom narrative, in which an asset is viewed favorably by a large group of

investors, could easily constitute a situation where prices rise beyond what is traditionally viewed as an asset's fair, fundamental value.

However, I would stop short of labeling any price rises in this regard as a bubble, simply because this stage refers to a narrative that is based upon the detailed analysis of the asset's future returns and is largely confined to a group of professional investors that are well aware of the risks involved. Thus, under the I/N perspective, *an asset bubble exists when a boom narrative becomes the taken-for-granted context by which investors make decisions*. Under such conditions, boom narratives become an "inescapable context" in which both individuals and organizations operate (Teeter and Sandberg, 2017, p. 92).

Important here is that such a definition does not require prices to rise by any minimum amount, nor does it require prices to fall in a dramatic manner. What it does require is that an asset's value must be supported by the prevailing social, cultural, economic, political, and/or legal institutions of society. When looking back on various large-scale bubbles of the past 400 years, it is a relatively easy task to identify examples of boom narratives becoming institutionalized. For instance, in the 1990s, the narrative of an "Asian economic miracle" powered by the "four Asian tigers" was adopted in numerous publications by some of the world's most well-respected financial institutions, such as the IMF and World Bank (Page, 1994; Sarel, 1996). Consequently, East Asia's boom narrative was given social legitimacy and ultimately became a taken-for-granted aspect of investment in the region. Central to this narrative was the assumption by investors that they ran no exchange rate risk in countries with fixed exchange rates—an assumption that encouraged international investors to adopt numerous aggressive, and poorly hedged, bets in the region (Kahler, 1998).

In the recent housing bubble, a collective narrative formed around the theme that homes were "*investments* that never lost value" (Davis, 2010, p. 75, emphasis in original). Such a view then became an assumption that was deeply embedded in the financial community. For example, the value at risk (VaR) measurement, which was the most widely used model for valuating risk at investment banks at the time, was based on the assumption that home prices could never fall by a significant amount nationwide (Campbell, 2010). When this assumption proved to be false, all VaR measurements instantaneously became worthless.

While the I/N perspective is not a theory in the sense that it argues that narratives are the sole or most important cause of all asset bubbles, such a perspective does enable researchers to track the emergence, development, and growth of a bubble. In addition, the I/N perspective does not stand in contradiction to findings from various fields that have identified a litany of factors responsible for

the current and recent crises, such as low interest rates (Issing, 2009), fraud (Akerlof and Shiller, 2009), deregulation (Jain, 2009), financial innovation (Morgan, 2010), cultural shifts (Hirsch and Morris, 2010), and agency issues (Friedman, 2011). Rather, the I/N perspective allows researchers to analyze how these factors affect the emergence and growth of a boom narrative, for example by acting as an enabling force or by ultimately becoming a destinator.

Nor does the I/N perspective contradict observations of "group think" or "herd behavior" from the behavioral sciences. Instead, the I/N perspective suggests that it is the development of a commonly shared, and increasingly simplified, narrative that makes group think and herd behavior so widespread in financial markets. With most investors falling back on the narrative to guide their decisions and other, perhaps more sophisticated, investors "buy[ing] in anticipation of further buying by uninformed investors" (DeLong *et al.*, 1990, p. 380), it is easy to understand how herd behavior could become so pervasive in the first place.

Given its ability to track the emergence, development, and growth of asset bubbles, the I/N perspective outlined above should serve as a useful sensitizing mechanism for future research on these events. Of important note is that the three stages identified above should not be seen as a linear, deterministic process of asset bubbles being constantly produced. Instead, the processes by which boom narratives emerge, develop, and grow are undoubtedly much more nuanced.

The I/N perspective is thus much in line with current theory on processual activities, which falls under the large umbrella of process theory. Process theory refers to the study of sequences of events, choices, relationships, ideas, and activities over time (Langley, 1999; Langley and Tsoukas, 2010). The ultimate aim of process studies is to understand the patterns in events and why things evolve over time in specific ways (Van de Ven and Huber, 1990; Van de Ven and Poole, 1995). To probe into the evolution of events, process studies investigate how an issue grows, develops, and terminates and focus on how events unfold *in situ* (thus preferring the gerund "-ing" form of verbs such as "choosing" over "chose" or "negotiating" over "negotiated") (Langley and Tsoukas, 2010; Welch and Paavilainen-Mäntymäki, 2014).

The core assumptions underlying process studies are that phenomena have a transient, fluid character and experience multidirectional causality, such as through feedback loops (Pettigrew, 1992; Sminia, 2009; Tourish, 2014). As a result of these assumptions, process studies require longitudinal research strategies, where researchers are sensitive to how the unit of analysis changes in content and/or shape over time (Monge, 1990). Process studies therefore adopt a rather different view of phenomena than most variance studies, which are primarily concerned with how a number of independent variables affect one or more dependent variables (for further explanation, see Welch

and Paavilainen-Mäntymäki, 2014, p. 4). In contrast, process studies are concerned with how sequences of events can help to explain the temporary outcomes of various scenarios (Sminia, 2009).

A key distinction to make in process studies is the degree to which one is adopting a "strong" or "weak" view of process. A weak or "synoptic" (Tsoukas and Chia, 2002) view of process treats processes as reducible to the action of things (Bakken and Hernes, 2006; Chia and Langley, 2004). Accordingly, static entities still dominate theoretical development, only their periodic alterations and evolutions are explored in greater detail. Conversely, a strong or performative view of process, as adopted in this thesis, sees actions and things as instantiations of complex processual movements (Chia and Langley, 2004). Under such a view, change is regarded as endemic and constitutive of our world (Mesle, 2008).

Adopting these assumptions, the I/N perspective acknowledges a complex, multidirectional flow of information between various agents but argues that a broader sequence of phases is crucial in understanding the narrative component of asset bubble formation. While it could be argued that processes are much too complex to allow for such a view, studies have demonstrated that just a few deterministic elements are powerful enough to generate the complexity found in most social phenomena (for an overview, see Langley, 1999). However, what is missing from the I/N perspective, and what precludes it from theoretical contention, is an explanation of the underlying forces and conditions driving the evolution and institutionalization of a boom narrative.

Later in section 3.5, I return to this issue to discuss some of the unresolved aspects of the I/N perspective. Before doing so, in the next section I elaborate on the underlying theoretical stance of the I/N perspective, primarily its ontological assumptions about the nature of financial markets.

3.4 The theoretical underpinnings of the I/N perspective

As applied in this thesis, the I/N perspective conceptualizes markets, which are arenas where goods, services, and monies are exchanged, as complex, socially constructed institutions (Abolafia, 1996). Such a conceptualization stands in contrast to the mainstream economics view of markets as price-setting mechanisms (Biggart and Delbridge, 2004) and is based on the ontological assumptions that what we define as reality is in a constant state of social construction and that the construction of institutions is primarily a political project undertaken by powerful actors. Below, I elaborate on these assumptions.

The central premise underlying a social constructionist account (Berger and Luckmann, 1966; Gergen, 1994) of market behavior is that reality, in particular "social reality" or "social facts" (Searle, 1995), is not objective or given but is socially constructed in an ongoing process of actions and negotiations. In this sense, knowledge is viewed as produced not by individuals but through social interactions, while language is not seen as representing reality but as another part of reality that is socially constructed (Sandberg, 2001). As applied to the context of market behavior, "individual economic activities, such as speculation, are enacted in the context of social relationships, cultural idioms and political and economic institutions" (Abolafia, 2010a, p. 95). That is to say, financial decision-making is seen as constrained, shaped, and encouraged through social interactions, rather than solely based upon rational assessments of fundamental values.

As can be inferred, a social constructionist account of markets sees values, beliefs, and culture as central to understanding markets (Abolafia, 1996; Biggart and Delbridge, 2004; DiMaggio and Zukin, 1990). For instance, DiMaggio and Zukin (1990) argue that culture can affect markets by influencing the interests of actors, by constraining their options, or by shaping a group's goals and capacity to mobilize. Friedland and Alford (1991) see culture as defining the "logic of action" for any given domain, which refers to the domain's, such as the family or economy, range of acceptable goals and strategies. For the economy, it follows that the rational maximization of outcomes based upon individual aspirations is not an innate drive but rather a socially defined goal and strategy (Abolafia, 1996).

Under a social constructionist view, markets can only be seen as "stable" due to the creation of several institutions that are ultimately rooted in and upheld by the state (Fligstein, 1996). As explained by Abolafia (1996, p. 8), "stable and orderly market arrangements are produced and reproduced as a result of the purposeful action and interaction of interdependent powerful interests competing for control." Through a never-ending process of negotiation, powerful actors produce socially accepted institutional arrangements, which include rules, roles, and relationships, that define markets and make market stability possible.

As highlighted by Fligstein (1996), legally institutionalized rules, such as laws, are never neutral and play a highly influential role in determining how markets function and, to a large extent, who stands to gain and lose the most given current conditions. As in all states, laws are subject to ongoing political contests over their content and applicability, which also includes consideration as to the amount of state intervention in the economy (Fligstein, 1996).

Central to this thesis is the intersection of these assumptions and the I/N perspective of asset bubble formation. Table 3.1 on the next page provides an overview of this intersection. As the I/N perspective developed in this thesis is intended for use as a sensitizing mechanism, Table 3.1 also identifies areas in need of further investigation. In the following section, I further discuss some of the unresolved aspects of the I/N perspective and identify the two related research questions that are investigated in the empirical component of this thesis.

3.5 Formulating the study's research questions

The I/N perspective provides a useful framework by which scholars can start to probe deeper into the theoretical connections between narratives and bubble episodes. Moving forward, narrative research on asset bubbles can take two general, and complementary, approaches: probing the origins and existence of narratives behind asset bubbles, and investigating the spread and resilience of these narratives.

Research on the origin and existence of narratives during speculative bouts can be conducted at two levels. A first and necessary step is to map out in detail the descriptive features of the narratives, primarily those identified in section 3.1, that arise and circulate during these events.

These descriptive features—such as subject, destinator, and enabling forces—are, however, merely descriptive. Moving from descriptive features of boom narratives to theoretical explanations of their origins and ultimate existence requires research into their deeper structures (Pentland, 1999).

The deeper structures of a narrative refer to the voice or point-of-view behind the narrative, the narrative's underlying event templates or storyboards, and, ultimately, the routine and abstract processes that give rise to the narrative (Bal, 1985; Van de Ven and Poole, 1995). These deeper structures raise numerous, and heretofore mostly ignored, questions concerning asset bubbles.

These questions include "Whose point-of-view is over- or under-represented in a boom narrative?", "What patterns exist amongst history's more notable boom narratives?", and "What economic and social processes ultimately give rise to the creation of boom narratives?" The answers to questions such as these would certainly have direct implications for the forces underlying the origin and existence of narratives behind market speculation.

Table 3.1 Overview of the I/N Perspective

Stage	Description	Major assumptions	Examples of unresolved aspects
Boom narrative	One of the many well-cited narratives to emerge is a boom narrative, which leads investors to expect significant capital gains.	• Reality and knowledge are socially constructed phenomena • Language does not represent reality, it is constructed and helps construct reality • The interests and options of any actor are affected by their culture, values, beliefs, relationships, and institutions	• What are the descriptive features of historical boom narratives? • Whose voice or point-of-view is over- or under-represented in historical boom narratives? • What economic, social, and cultural conditions and processes are associated with the creation of boom narratives?
Collective boom narrative	A boom narrative is shared by a significantly large group of investors	• A group's goals and capacity to mobilize are affected by their culture, values, beliefs, relationships, and institutions	• Why do some boom narratives take hold, whereas others wither away? • What types of communities or groups are more likely to share a boom narrative?
Institutionalized boom narrative	A boom narrative is institutionalized and thus becomes the taken-for-granted context by which investors make decisions	• Institutions, which are rooted in the state, create market "stability" • Powerful actors produce institutional arrangements • Institutionalized rules are never neutral, there are always winners and losers	• How do boom narratives become institutionalized? • Why do efforts to deinstitutionalize boom narratives fail?

What is perplexing about boom narratives, though, is not just their origin and existence but their ability to spread and infect broad swathes of society. Thus, the most immediate area of concern is likely the last stage of the I/N perspective, that being understanding how and why certain boom narratives become institutionalized. In other words, if we can better understand how and why these narratives become institutionalized, we may be able to better identify the processes by which destructive, large-scale bubbles form. Thus, the first and primary research question posed in this thesis is: *How does a boom narrative become institutionalized?*

As noted in section 2.3, a striking limitation of current research is its lack of explanations of why bubbles cannot be "popped" or "deflated" before they grow large enough to result in widespread turmoil. Looking at this question through the I/N perspective, one would reply that a boom narrative has become institutionalized and thus is already deeply embedded in society. However, as already discussed in this chapter, over the past twenty years research on institutional theory has provided numerous examples of practices being deinstitutionalized (e.g., Ahmadjian and Robinson, 2001; Davis *et al.*, 1994; Maguire and Hardy, 2009). That is to say, Paul Warburg's efforts in 1929 and Alan Greenspan's warnings in 1996 should be regarded as attempts to deinstitutionalize the prevailing narrative, but efforts such as these seem to fail time and again. Theoretically, we would expect that as contradicting narratives emerge and spread, processes of deinstitutionalization or institutional change are increasingly likely (Ocasio *et al.*, 2015).

Unfortunately, as this phenomenon has very few successful cases to examine, providing any detailed or empirical answer as to why these efforts fail may prove challenging. However, by first exploring how a boom narrative becomes institutionalized, this thesis should be able to provide some preliminary insight on why bubbles cannot be popped. Thus, the second question asked in this thesis is: *Why do efforts to deinstitutionalize boom narratives fail?*

These two research questions were investigated as part of a large-scale empirical study, the results of which are reported in Chapters 5 through 9. As these two questions are overlapping, they are addressed in tandem in this thesis. In the next chapter on research design, I explain how this was accomplished.

CHAPTER 4: METHOD AND RESEARCH DESIGN

In this chapter, I outline my case selection, choice of methods, data sources, and analytical techniques. These features constitute an overall research design aimed at providing empirical evidence supporting answers to the two research questions posed in this thesis. The purpose of this chapter is threefold. First, readers are provided with an explanation of the motivation behind the design of this project. Second, this chapter enables readers to better understand the procedures and techniques behind the findings presented in Chapters 5 through 9 and the theoretical development in Chapter 10. Third, and equally important, this chapter should enable any reader to either reconstruct this very study or to construct a similar study to test the applicability of my findings across other cases.

This chapter is structured as follows. I first explain my selection of a single case study design and, specifically, my choice of the U.S. tech bubble of the 1990s. I then provide some background information on the four methods employed in this study, which are an event history database, narrative analysis, discourse analysis, and process analysis. I then explain my data sources, while leaving the sampling results for their respective chapters. Lastly, I explain the unique form of analysis employed in this study, which combines the four methods mentioned above in a novel way in order to best answer the study's research questions.

4.1 Case selection

In order to uncover how boom narratives become institutionalized and better understand why efforts to deinstitutionalize these narratives fail, I selected the U.S. tech bubble of 1997 to 2000 for investigation. Previous studies on bubble episodes from the fields of sociology and organizational studies frequently employ a case study design (e.g., Abolafia and Kilduff, 1988; Campbell, 2010; MacKenzie, 2003, 2011; Perrow, 2010), with a major strength of these studies being the ability to track the historical emergence (or destruction) of certain phenomena. While selecting two or more cases would have provided more extensive opportunities for cross-case comparison, extant research on institutional change demonstrates the need for researchers to develop a deep and holistic understanding of each case under study (Suddaby and Greenwood, 2005; Zilber, 2006). In the final chapter of this thesis, Chapter 10, I provide a few suggestions on how researchers can conduct similar research on other bubbles to allow for cross-case comparison.

The U.S. tech bubble was specifically chosen as a case for empirical study for three main reasons. First, the tech bubble is a recent, large-scale bubble that involved a number of different actors. Therefore, unlike some smaller, isolated events, this bubble cannot be explained as merely

resulting from market manipulation, misevaluations, and the like. As mentioned in Chapter 2, the tech bubble represents one of the many major speculative events that coincided with a significant technological breakthrough, as also seen with rapid advancements in automobile, radio, and microelectronic technologies. Therefore, this study provides direct insight into the types of narratives that emerge and become institutionalized during these technological transitions. Furthermore, the scale of this event ensures that it is well documented by a range of texts and historical accounts, which should make the processes underlying the event more "transparently observable" (Eisenhardt, 1989, p. 537).

Second, the tech bubble represents an instance where—despite countless books and studies on the event—the institutional origin of its boom narrative is still unknown. Shiller (2005, Ch. 4) comments on how, despite a crash in stock prices in 1987, in the 1990s the notion of stocks being the best investment simply took over. Third, the history of the tech bubble includes clear examples of failed efforts to deinstitutionalize its boom narrative. For instance, in addition to Greenspan's warning in 1996 of "irrational exuberance," in the late 1990s numerous news articles started to document the apparent herd behavior surrounding tech stocks (Shiller, 2005, Ch. 6). Despite these warnings, stocks continued to climb for another four years. It remains unknown why such prominent voices did not have a greater effect.

4.2 Choice of methods

This thesis employs a unique combination of narrative analysis, an event history database, discourse analysis, and process analysis. The precise order, execution, and combination of these methods are fully described in the analysis section, section 4.4. Below, I first provide an overview of the motivation for and some necessary background information on each method.

Section 3.1 in the previous chapter provides an explanation of the motivation for this study's narrative form[7]. This narrative form thus serves as one of the central methods employed in this thesis, as I identified the connotation of various texts and the narratives within according to their subject, object, destinator, enabling forces, and impeding forces. This is a basic type of *narrative analysis*, which is essentially identifying the tonality and descriptive features of a narrative. As explained in section 3.1, narrative analysis can take on many forms, and, as discussed in section 3.4, other narrative techniques can be used to probe into the ultimate origins of any given narrative. However, this study is primarily concerned with the eventual institutionalization (and failed

[7] To clarify, section 3.1 describes this study's narrative form, while section 3.3 utilizes this form to develop a unique narrative perspective (the I/N perspective) by which to investigate asset bubbles.

deinstitutionalization) of these narratives. Hence, after mapping the various narratives present in the sample texts, these narratives then became the unit of analysis for an institutional investigation.

An event history database (e.g., Langevoort, 2007; MacKenzie, 2011), discourse analysis (Foucault, 1972a; Potter and Wetherell, 1987), and process analysis (Langley, 1999; Langley and Tsoukas, 2010) were chosen as the methods by which to analyze the institutionalization and failed deinstitutionalization of the tech bubble's boom narratives.

Given its focus on analyzing interrelated texts that "cohere in some way to produce both meanings and effects in the real world" (Carabine, 2001, p. 268), discourse analysis is particularly well suited to investigate the development and spread of narratives. Discourse analysis is also one of the most commonly used methods to uncover institutional processes (Maguire and Hardy, 2009; Phillips *et al.*, 2004; Schmidt, 2008; Schneiberg and Clemens, 2006; Selsky, Spicer, and Teicher, 2003). However, institutional studies that rely solely on discursive analysis are often criticized for ignoring the prevailing historical, cultural, and social structures of the time (Heracleous and Hendry, 2000). Numerous scholars have argued that discourses must always be viewed in context, for texts are entirely dependent upon society and history for their resources and their meanings can never be detached from their situational context (Fairclough, 1992; Hartz and Steger, 2010; Leitch and Palmer, 2010; Taylor *et al.*, 1996). In addition, as institutionalization and deinstitutionalization are both processes of change (as highlighted in the previous chapter), studying these phenomena requires acute attention to the underlying sequences, patterns, fluidity, and multidirectional causality at play[8]. Therefore, in order to establish the historical and social background of the tech bubble and the connections between discourse and context over time, this study combines discourse analysis with an event history database and process analysis. Below, I further elaborate on these three methods.

Discourse analysis is the systematic analysis of discourse, which can be referred to as a group of statements found in texts that describe a particular object, subject, or event (Foucault, 1972a). In discourse analysis, both the words "statement" and "text" are understood rather broadly, as statements refer to not only sentences but also calculations, graphs, and pictures (ibid.), while texts can include documents, books, media accounts, interviews, and speeches—essentially anything that takes on "material form and [becomes] accessible to others" (Taylor *et al.*, 1996, p. 7). These texts

[8] My argument here is thus that *all* studies of institutionalization and deinstitutionalization are inherently process studies. That is not to say to that all previously conducted studies of these phenomena properly implement or even acknowledge a process perspective. This debate, however, lies far outside the bounds of this thesis (for a similar critique, see Welch and Paavilainen-Mäntymäki, 2014).

are understood to enable the development of stories, which, taken together, constitute a framework that allows certain meanings to emerge.

Given the broad scope of its definition, discourse analysis can be used in a variety of ways and in a wide range of disciplines. For example, linguists tend to view discourse as language use and thus frequently investigate discourse at a more detailed, micro level (Alvesson and Karreman, 2000), whereas sociologists view discourse more as a form of social interaction, leading them to concentrate on broader patterns and contexts within discourses (van Dijk, 1993). In addition, scholars can choose to adopt a neutral stance towards the subject matter or take a more critical view and analyze how texts create and sustain forms of social dominance by some groups over others (Blommaert and Bulcaen, 2000; Fairclough, 1992; van Dijk, 1993). In order to unveil how boom narratives become institutionalized over time, this study adopts a "meso" level of discourse analysis, which is "relatively sensitive to language use in context but interested in finding broader patterns and going beyond details of the text and generalizing to similar local contexts" (Alvesson and Karreman, 2000, p. 1133).

As already mentioned, discourse analysis is frequently used to study institutional processes, including instances of deinstitutionalization (Maguire and Hardy, 2009). The importance of language and discourse has long been stressed by institutional scholars (Berger and Luckmann, 1966; Searle, 1995), for discourses are interpreted as not only referring to but also *forming* the objects of which they speak (Foucault, 1972a). Berger and Luckmann (1966) view language as "the most important sign system of human society" (p. 35) because it "continuously provides [one] with the necessary objectifications and posits the order within which these make sense and within which everyday life has meaning" (p. 21). Searle (1995) sees language as "essentially constitutive of institutional reality" (p. 59), noting that "in order to have institutional facts at all, a society must have at least a primitive form of language" (p. 60).

Under neo-institutional theory, discourse is viewed as one of the primary means of institutionalization, deinstitutionalization, and institutional change. Although agents are always subject to the rules of institutional reality, they are always capable of thinking, speaking, and acting outside of those institutions (Colomy, 1998; DiMaggio, 1997). In direct relation to this thesis, Colomy (1998, p. 289) reviews how institutional entrepreneurs frequently present their accounts in narrative form. As narratives are capable of entertaining, instructing, persuading, examining, and indicting, they are able to effectively discredit existing institutions and legitimize new programs (ibid.). Thus, while discourse is never a perfect representation of cognition (Cornelissen *et al.*, 2015;

Schneiberg and Clemens, 2006), discursive output is one of the best sources of documentation of institutional features.

Phillips and colleagues (2004) criticize institutional scholars for giving too much weight to patterns of action, arguing that "it is not action per se that provides the basis for institutionalization but, rather, the texts that describe and communicate those actions" (p. 635). The authors provide the example of Palmer, Jennings, and Zhou's (1993) study, which demonstrates how texts used in U.S. business schools contributed to the widespread adoption of the multidivisional form by corporations in the 1960s. While most discourse analysts agree that discourses are never completely cohesive or able to determine social reality by themselves (Foucault, 1972a; Phillips *et al.*, 2004; Schmidt, 2008; Selsky *et al.*, 2003), discourse is commonly viewed as a dominant social force that shapes and constrains ideas and actions—while also providing "particularly good indicators of social change" (Fairclough, 1992, p. 211).

An e*vent history database* is a typical method used to study the social construction of various phenomena, such as legislative acts (Langevoort, 2007), social problems (Lopata, 1984), economic crises (MacKenzie, 2003, 2011), and asset bubbles (Abolafia and Kilduff, 1988). As its name suggests, this technique is concerned with chronologically mapping the significant events, actors, modes of thinking, policies, practices, cultural shifts, and/or social institutions associated with a particular phenomenon. For example, in his analysis of the evaluation practices of financial instruments leading up the credit crisis of 2008, MacKenzie (2011) documents how asset-backed securities (ABSs), despite being structurally similar to other collateralized debt obligations (CDOs), came to be evaluated in two separate stages, a process that sidelined previously important gatekeepers.

Lastly, *process analysis* is an overarching term that refers to a multitude of ways by which scholars can probe into the processual evolution of various phenomena (for an overview, see Langley, 1999). While diverse in their methodologies and their application of the term "process," these analytical techniques share a common goal of identifying the basic mechanisms that drive patterns of events (Tourish, 2014; Welch and Paavilainen-Mäntymäki, 2014).

This study employs two forms of process analysis. First, it employs a story or narrative strategy (Langley, 1999, p. 695). This technique involves constructing a detailed story from the raw data, where the researcher organizes the various levels of data chronologically. This technique allows the researcher to clarify sequences of events, propose causal linkages, and identify early analytical themes (Pettigrew, 1990, p. 280). A chronological story strategy, which is also a typical ethnographic tool (Van Maanen, 1988), preserves the detail and context of the data. Due to this

preservation, a story strategy is often a preliminary process tool by which researchers can organize and further probe into the data (Langley, 1999).

A second process technique used in this study is temporal bracketing (Langley, 1999, p. 703). Temporal bracketing involves demarcating the data according to successive periods or phases. These phases do not represent a theory in themselves, but they structure the chronological data in a logical way and allow the researcher to further probe how a phenomenon evolves over time (ibid.). Phases are organized according to the principle of continuity, where events and ideas that express continuity are grouped together and periods of discontinuity are highlighted (Langley and Truax, 1994). Of important note, these phases do not necessarily represent predictive sequences. Instead, they further structure the data to allow for theoretical abstraction, particularly of feedback processes, multidirectional flow, and underlying, causal forces.

4.3 Collecting data

Data for the event history database consisted primarily of books on the tech bubble but was also supplemented with articles from leading news outlets and academic journals in the fields of economics, business, law, and sociology. All data sources for the event history database are given in in-text citations.

For narrative, discourse, and process analysis, texts on technology stocks were gathered from 1987 until the bubble's bursting in 2000. While the tech bubble did not start until the mid 1990s, I chose 1987 as the starting year due to it being the year of the last stock market crash before the tech bubble, which enabled me to better observe the reemergence of interest in stocks and the historical processes by which a boom narrative was institutionalized (Berger and Luckmann, 1966). Also, while stock and tech narratives certainly continued after the bubble burst in 2000, the study of these narratives is not of direct relevance to the research questions posed in this thesis.

It is important to stress that this study is not concerned with the public's interest in stocks in general, which certainly would be influenced by a range of historical events dating back to and even preceding the creation of the stock market. Rather, this study is aimed at understanding how expectations of significant capital gains in tech stocks in the 1990s become a taken-for-granted aspect of investment.

The selection of these texts was guided by the three "pillars" of institutionalization—the cognitive, normative, and regulative. In the remainder of this section, I provide an overview of each pillar's corresponding population dataset. For each population dataset, samples were then taken, the

process of which was analytical in nature and thus is explained in the analysis section. In total, the sampling process resulted in 400 institutional texts (approximately 4,000 pages of raw data).

An important overarching objective of my text selection was to strive to select texts representing a conservative, "higher level" of institutionalization. In other words, I sought to include sources that, by their very design and place in society, aim to be prudent and cautious in their discourse and decision-making. Thus, by understanding the narratives and their change over time at these sources, two conclusions can be argued. First, that the boom narratives, if present, at these sources would certainly be present at less conservative and cautious sources and represent a conservative estimate of the trends that occurred during the 1990s.

Second, these sources would have a much greater institutional effect, for they represent centrally-located and highly trusted sources of information and discourse by both professional, institutional investors and non-professional, retail investors. As these sources would have greater resource power and formal authority, discourse at these sources often results in actions of great consequence for broader society (Phillips *et al.*, 2004). Below, I elaborate on this concept for each pillar's text selection.

4.3.1 Cognitive pillar

Various sources of discourse could be used to represent the cognitive pillar of discourse, such as academic texts, research publications, or texts produced by international economic and financial bodies, such as the IMF. For this thesis, I instead chose to analyze texts from the U.S. Federal Reserve, which is the U.S.'s central banking system.

This decision was made for three reasons. First, the Federal Reserve was one of the most closely followed, if not *the* most closely followed, sources of U.S. economic reporting and forecasting during the 1990s—as it was in the decades preceding and following. The Federal Reserve, also referred to as "the Fed," conducts various types of economic research, all of which is highly regarded by the nation's financial institutions and a broad range of investors. Second, not only does the Fed possess a high level of discursive power, it also possesses a form of direct control over the nation's economy, for the Fed is responsible for implementing the nation's monetary policy (for information on how this is accomplished, see the Fed's website at www.federalreserve.gov). Lastly, the Federal Reserve also has numerous regulatory and supervisory responsibilities concerning the nation's banks and banking system. For instance, the Fed has responsibilities over setting margin requirements and helps to develop federal laws regarding consumer credit. Of important note, the Federal Reserve was created in 1913 in direct response to a series of nationwide financial panics.

Consequently, the Fed has both historical and obligatory motives to promote economic stability and prevent large-scale asset bubbles from forming and bursting.

For my dataset, I analyzed speeches of Federal Reserve officials, which are likely to be more widely read (in this case heard as well) and understood than the Federal Reserve's detailed economic publications. All speeches from the year 1997 onwards were available on the Federal Reserve's website at the time of this project, while speeches from the year 1987 to 1996 were obtained via direct request to the Federal Reserve under the Freedom of Information Act.

4.3.2 Normative pillar

As noted by Maguire and Hardy (2009, p. 154), the normative aspect of discourse is rather difficult to capture, particularly because the normative pillar consists of attention to informal rule systems and social expectations. Following the decision of Maguire and Hardy (ibid.) to use newspaper articles as an indicator of normative pressures, for this study, the news media discourse was selected to represent the normative pillar. As the news media carries with it not only factual descriptions of events but also several comments, interpretations, evaluations, and recommendations (Fowler, 1991; Kuronen, Tienari, and Vaara, 2005), news texts play a strong normative role in society.

The media is also frequently regarded by scholars as one of the most important influences on the social construction of reality (Desai, 2014; Hartz and Steger, 2010; Scott, 1995). Scholars have demonstrated how the media shapes the economic, political, and moral settings of society, as "we walk around with media-generated images of the world, using them to construct meaning about political and social issues" (Gamson *et al.*, 1992, p. 374). As such, the media is seen as carrying powerful institutional pressures (Scott, 1995) and playing a dominant role in shaping societal discourses (Desai, 2014). In addition, numerous studies have demonstrated how media coverage can influence various types of business and investment decisions, such as foreign location choice (Kulchina, 2014) and stock purchases (Johnson *et al.*, 2005; Pollock and Rindova, 2003; Wisniewski and Lambe, 2013).

As one cannot analyze all media documents on a given topic over a 20-year period, a sample of media articles from two leading U.S. media outlets was taken. These outlets were *The New York Times*, chosen due to its nationwide and international prominence and being based in New York City, and *Fortune*, chosen due to its position as one of the nation's leading business magazines. While the sample could include a larger number of media outlets, research has shown that journalists frequently imitate one another, resulting in numerous articles being almost carbon copies of one another (Shoemaker and Reese, 1996; Sigal, 1973).

In addition, the selection of two outlets, as opposed to five or six and thus a smaller number of articles from each outlet, allowed me to better observe shifts in discourse over time, which is the focus of this study. Articles from both media outlets were searched on ProQuest database, with many of the *Fortune* articles being obtained from Fortune's website, fortune.com (archive.fortune.com/magazines/fortune/fortune_archive/).

4.3.3 Regulative pillar

In order to account for the regulative pillar, I obtained texts from the highest relevant level of U.S. government, which in this case was deemed to be hearings from the United States Senate Committee on Banking, Housing, and Urban Affairs. These hearings include speeches and testimony by a wide range of public and private sector experts on potential and existing federal legislation that concerns banking, insurance, financial markets, securities, housing, international trade and finance, and economic policy (for more information, see their website at www.banking.senate.gov); therefore, the discourse from many of these hearings is of direct relevance to the tech bubble.

These Senate hearings can be subdivided into full committee hearings, subcommittee hearings, nominations, mark-ups, and conferences. For this thesis, only full committee hearings were sampled to ensure each hearing included a broad debate and was perceived as of great relevance or importance at the time. All hearings from the year 1997 onwards were available on the Committee's website at the time of this project, while hearings from the year 1987 to 1996 were obtained via direct request to the Committee under the Freedom of Information Act.

4.3.4 Discussion

While these three sources represent a broad sample of the institutional discourse concerning the tech bubble, these three sources are certainly not an exhaustive sample of the discourse and narratives related to tech stocks that existed during the 1990s. As already mentioned, what these three sources do represent is a conservative, higher level picture of the narratives that became institutionalized during these years.

All three of these sources—the Federal Reserve, leading media outlets, and the U.S. Senate—have a vested interest in presenting prudent, well researched texts that offer a fair and balanced view of the U.S. economy and financial markets (that is not, of course, to say that they always do). Hence, while these three samples do not represent the ultimate sources of various economic and market narratives, they do represent the highest levels of institutionalization—which is precisely the

objective of this thesis. It is also important to stress here that institutional pillars can overlap significantly at times. My strict separation of the three institutional elements is thus largely for analytical purposes.

A relevant question related to this discussion is to why the tech companies themselves, along with the analysts and brokers who touted the stocks of these companies, were not chosen as a source of institutional text. While it could be argued that the discourse present in the published reports of these companies and of the analysts and brokers covering these companies is representative of the cognitive pillar of institutionalization and was highly influential in creating the tech mania of the 1990s, these documents were not included for a few reasons.

First, companies have every incentive to generate (overly) optimistic, self-aggrandizing narratives of themselves. Thus, the study of how companies present their own narrative or that of their industry, while useful in many other endeavors, is not the focus of this thesis.

Second, in a similar manner, brokers have every incentive to be optimistic about market performance. Brokers make commissions as a direct result of market participation, and if people are pessimistic about markets, they simply will not participate. Third, it is now well established that analysts are incentivized to generate biased, optimistic forecasts (Hong and Kubik, 2003; Lin and McNichols, 1998), which was certainly the case during the tech bubble (this point is elaborated upon in Chapter 5).

Thus, while these players were certainly influential in the emergence of the tech bubble, the fact that they produced favorable discourse of tech companies during the 1990s is hardly surprising or even unique to that period. What was surprising and unique about the late 1990s was how *everyone*, not just these parties, became so enamored with tech stocks.

That being said, these sources are crucial to the understanding of the tech bubble. Of particular importance is an understanding of how the discourse of tech companies, their analysts, and related brokers was received by and disseminated throughout society. Hence, my study gives particular attention to the references to these sources and their discourse. The media sample in particular was rather revealing here, for it included numerous references to tech executives, analysts, investment bankers, and the like. By selecting regular newspaper articles as opposed to editorials or op-eds, I was able to include a large number of these sources in my study. As a result, the media sample acted as both a proxy and a filter for the narratives that emanated from these sources. This relationship is further elaborated upon in Chapters 7, 9, and 10.

4.4 Analysis

The analysis in this thesis was inspired by a range of texts, all of which are cited in this section. However, I also customized each method and the combination of these methods to provide the best overall means of answering the two research questions. The analysis in this thesis is comprised of five stages. Table 4.1 on the following page provides an overview, and below I describe each of these stages in detail. For further insight into my analytical procedures, Appendix 4 at the end of this thesis provides an example of how one text was analyzed.

4.4.1 Event history database

My analysis commenced by constructing an event history database of the key events, actors, policies, practices, and institutions associated with the U.S. tech bubble. In this stage, different accounts of the episode were juxtaposed, resulting in a relatively comprehensive account of the event. This part of the analysis was designed to capture "who did what, and when." The purpose of this event history database was to establish the historical and social background of the tech bubble and the connections between discourse and context.

Thus, this stage of analysis remained rather broad as I abstained from overanalyzing the events surrounding the tech bubble. In the summary chapter of my findings, Chapter 9, I probe deeper into the events surrounding this episode by highlighting their influence on and causation by narratives of the period.

4.4.2 Sampling by keyword

The second stage of my analysis was essentially the sampling stage for texts used in narrative and discourse analysis. This stage also revealed several important trends in terms of the attention given to various topics throughout the sample period and thus the full results and some further details about this stage are provided at the beginnings of Chapters 6, 7, and 8. To arrive at samples for each pillar, keyword searches were conducted in the titles of the speeches, articles, and hearings for each respective pillar. The keywords included were "stock(s)," "equity (-ies)," "market(s)," "technology (-ies)," "innovation(s)," and "new economy."

Table 4.1 Stages of analysis

Stage and method	Data	Purpose	Key references
Stage 1: Event history database	Numerous books and articles, sources provided in text (Ch. 5)	• Establish background of tech bubble • Enable further analysis	• Abolafia and Kilduff, 1988 • MacKenzie, 2003, 2011
Stage 2: Sampling by keyword	All three pillars as outlined in section 4.3	• Provide a sample for further analysis • Note trends in terms of topic attention	• Final samples provided in Appendices 1, 2, and 3
Stage 3: Narrative analysis	Sampled texts of all three pillars	• Capture emergence and characteristics of narratives, particularly boom narratives	• Fiol, 1989 • Propp, 1958
Step 1: Connotation of U.S. economy/companies		• Establish tonality of each item in reference to economy/companies	
Step 2: U.S. economy/company narratives		• Identify broader narratives	
Step 3: Connotation of tech companies/innovation		• Establish tonality of each item in reference to tech co.'s/innovation	
Step 4: Tech company/stock narratives		• Identify asset narratives	
Stage 4: Discourse analysis	Sampled texts of all three pillars and event history findings	• Examine institutional features of items individually and collectively	• Berger and Luckmann, 1966 • Maguire and Hardy, 2009
Stage 5: Process analysis	All data and findings	• Clarify sequences and suggest causality • Develop narrative theory of bubbles	• Langley, 1999 • Pettigrew, 1990

For both the cognitive and regulative pillars, the keyword "technological" was added, and for the regulative pillar only, the keyword "security (-ies, -ization)" was added. These additions were made to provide a slightly larger sample size for those pillars, with the initial keyword searches resulting in less-than-adequate sample sizes. Keyword searches for the normative pillar on media texts resulted in expectedly large sample sizes, making further sampling necessary. This process is discussed in full detail in Chapter 7.

Aside from arriving at an appropriate sample size for this study, these keyword searches, and thus this sampling process, were conducted for two very specific reasons. First, they allowed for an initial look at the attention given to the themes of stocks, equities, markets, technology, and innovation and the emergence of a new economy narrative. As I only conducted keyword searches in speech titles, this process ensured that these topics were the focus of sampled texts, as opposed to just being minor footnotes or mentioned in passing. Again, as my concern here is with how certain narratives became institutionalized and pervasive in society, my interest is when and how narratives concerning technology stocks and their context, the "new economy," became the dominant topics of discourse.

Second, by keeping these search terms rather general—that is, by choosing "technology" as opposed to "information technology" or "stocks" as opposed to "technology stocks"—the sample produced allowed for a comparison of these themes from the 1987 crash all the way up to the peak of the tech bubble. More specific search terms would have heavily biased my sample towards texts during the tech bubble, leaving little room for historical comparison.

4.4.3 Narrative analysis

In the third stage of my analysis, I created a narrative database by chronologically mapping the narratives of each institutional pillar. This stage of analysis was designed to capture the emergence and characteristics of various narratives, particularly the emergence and spread of each episode's boom narrative(s). In order to capture these features, this stage was conducted in four highly interrelated and iterative steps.

The first step was to initially read each speech, article, or testimony[9] (which I will refer to collectively as "items" hereafter) and categorize it according to its overall connotation of the U.S.

[9] For the regulative pillar, each Senate hearing was made up of various statements and testimonies. Each individual person's statement or testimony was treated as an individual item and analyzed separately from other statements and testimonies at the same hearing. Further details are provided in Chapter 8.

economy, including references to U.S. companies[10]. This step thus established the tonality of each item and provides a basic, initial look into the type of narratives that will arise within. While Fiol (1989) notes that tonalities can be positive or negative, I expanded the range of connotations in my analysis to provide a more balanced and nuanced view of the data. Five connotations were possible: 1) a "positive" connotation, in which the author or speaker expressed general satisfaction with the state of the U.S. economy and U.S. companies; 2) a "negative" connotation, which expressed a general dissatisfaction with the state of the U.S. economy and U.S. companies; 3) a "neutral" connotation, in which the author or speaker referred to the U.S. economy or U.S. companies, but mostly in a technical manner; 4) a "mixed" connotation, which expressed a relative balance of both positive and negative connotations; and 5) "N/A" or not available, meaning the item made no, or extremely sparse, mention of the U.S. economy or U.S. companies.

In this step, I abstained from reading too much into an author's or speaker's underlying or implied message(s). In other words, if an item included both positive and negative connotations, it was usually categorized as "mixed," whereas if an item was mostly technical in manner, it was usually categorized as "neutral." This ensured that items categorized as "positive" or "negative" would be marked as such by most, if not all, researchers conducting a similar study[11][12], meaning that any trend identified in these two categories is likely a conservative picture of what actually occurred.

Following this initial step, I then mapped the related U.S. economy narrative for each item. Thus, for each item, I took the U.S. economy, or U.S. companies in general[13], as the subject, and then identified the related object, destinator, and enabling and impeding forces. A narrative was only mapped for an individual item if fully present—items without a full economy narrative were

[10] An important distinction here is that I did not code the connotation of the item as a whole, simply its connotation of the U.S. economy or U.S. companies. For instance, some items would regard the U.S. economy as being in great shape and then focus on how a specific regulation was impeding one company's or industry's success. Such an item would be coded as a positive connotation of the U.S. economy, despite its overall negative tone.

[11] Researchers experienced with this type of coding would be familiar with the common practice of having a research assistant, or second author, independently code all of the items and then check for areas of agreement and disagreement. A second coder, though, was not used for this study, primarily because the coding for this project was extremely time-consuming and altogether took several months to complete. In order to provide transparency and enhance reliability in this stage, numerous quotations are provided in the findings sections to offer evidence and reasoning for how individual items were coded.

[12] Following the footnote above, I must note that the direct quotes in my findings section do not include page numbers, as these page numbers were in part arbitrary and not consistent throughout. For example, some of the media articles were copies of a newspaper or magazine print, while others were available online. For the regulative pillar, some items were available as part of the formal hearing copy, while others were available individually online. Thus, many page numbers would simply be arbitrary according to how items were printed out and not consistent in terms of source. In general, most items were two to 12 pages in length and thus the quotes supplied are easy to search and find.

[13] A few items, mostly media articles, included narratives of a single U.S. company. As many of these narratives were very specific to that company, they were usually not mapped or analyzed in detail. However, if the company's situation was described as being representative of its broader industry or the U.S. economy, the narrative was mapped and analyzed as a part of this thesis.

simply coded as N/A for this field. Similar to coding for connotations, I adopted a relatively conservative approach to identifying a narrative and its components[14]. Combined, steps one and two provided a rather comprehensive view of what could be labeled a broader, "grand narrative" that provides meaning to the actors involved (Deuten and Rip, 2000; Fenton and Langley, 2011).

Steps three and four were similar to steps one and two, only instead of analyzing the discourse of the broader U.S. economy, I looked for connotations and narratives concerning the asset of inquiry. Thus, I categorized each article's connotation of technology, including references to innovation, tech/telecommunications companies, and tech stocks, and then mapped any narrative treating tech companies or U.S./tech stocks as the subject. Again, a full narrative had to be present for it to be identified, otherwise articles were coded as N/A for this step.

4.4.4 Discourse analysis

The fourth stage of my analysis was conducted in a much more open manner, as I examined the broader institutional features of each item and the emergence, evolution, and relationships of the narratives over time. This stage was also highly interrelated to stages two and three and, similar to stage three, conducted in an iterative manner.

In order to analyze the institutionalization of each boom narrative, I investigated how and when "knowledge" about each asset came to be "socially established as 'reality' " (Berger and Luckmann, 1966, p. 3). In other words, I attempted to uncover how subjective opinions came to be viewed as objective facts over time, while searching for patterns of repetition and the processes by which a narrative seemed to take on a life of its own and appear as matter-of-fact and self-evident. In line with this approach, I focused on how discourses underwent shifts over time, while seeking to establish each narrative's "external conditions of existence" (Foucault, 1971, p. 22).

Such an approach led me to explore a range of questions about each discourse, such as "What is it possible to speak of?", "What terms are used, re-used, circulated, and repressed?", "What terms are seen as valid and which are abandoned?", and "Who has access to the discourse and who receives it institutionalized?" (Foucault, 1972b, pp. 234–235).

[14] Undoubtedly, the identification of a narrative can be viewed as subjective task. When conducting this step, along with every other part of the analysis for this thesis, I made all attempts to be somewhat conservative in my claims and maintained an attitude of skepticism. That being said, the findings presented in this thesis are still of my own production. I have made every attempt to provide ample quotations and evidence to support my claims, but I am only able to provide so much support in this document due to word limit constraints and in an effort to make this thesis as consumable as possible. Also, while I am confident that my findings are one plausible way of interpreting the data, I am by no means claiming that what is presented in this thesis is the only way of interpreting the data.

Central to this approach was an attempt to maintain a principle of "exteriority," meaning to resist the urge to interpret the underlying meaning of the actors involved and instead to treat each discourse as a factual phenomenon to be discovered. In other words, such an approach requires researchers to abstain from "reading between the lines" and engaging in guesswork over the motivation behind any given text. Instead, the focus is upon the immediate and potential effects of any given text. Hence, I closely examined where texts emanated from, how they were used, and when discourse became structured, coherent, and supported by a range of broader discourses (Phillips *et al.*, 2004).

Included in this stage was an investigation into why efforts to deinstitutionalize each boom narrative failed. From a social constructionist perspective, resistance to change implies "maintenance" of institutionalized acts (Berger and Luckmann, 1966). Thus, this stage of analysis focused on the threats to and maintenance of each institutional pillar as I explored how alternatives to the status quo were constituted, how choices were contested and justified, and the processes by which the range of alternatives expanded and contracted over time and across settings (Schneiberg and Clemens, 2006). I explored whether texts sought to problematize the prevailing boom narrative(s), paying close attention to the historical and institutional context of these texts. I then looked at whether and how these texts were supported, countered, or ignored in subsequent discourse and how other actors maintained the status quo.

4.4.5 Process analysis

Chapters 9 and 10 present the results of the fifth stage of analysis, which included two types of process analysis. First, as presented in Chapter 9, I constructed a comprehensive story of the tech bubble from the totality of my data. For this stage, I viewed the event history data, narrative data, and discursive findings in unison and then arranged the data chronologically. I was thus able to explore the relationships between the three pillars and the event history, allowing me to both "zoom in" on the discursive and material accomplishments and "zoom out" to see connections between discourse and practices over time (Nicolini, 2009).

This technique therefore provided a much broader overview of the narratives that emerged and persisted over time, including consideration of which institutional pillars were most powerful in the institutionalization of the boom narrative(s) (Schneiberg and Clemens, 2006). Based on the results of this first process technique, in Chapter 9 I arrive at a set of overarching conclusions of how the tech's bubbles boom narratives were institutionalized and why efforts to deinstitutionalize these narratives ultimately failed.

In the theoretical chapter, Chapter 10, I then present the findings of the second process technique, which was temporal bracketing. Temporal bracketing was used in this study mainly as a means of theoretical development. Thus, in this last stage of analysis, I abstracted my data one level and explored the continuity and discontinuity of the events and discourse of the study. This stage of analysis was guided by Weick's (1979) notion that all theories must balance accuracy, parsimony, and generality. Consequently, to ensure greater parsimony and generality, I considered how the features of the tech bubble story can be grouped and explained in a broader sense—that is, not just in terms of the emergence of dotcom firms and a new economy but in terms of interest in a new asset class and the development of an economy-wide boom narrative. As a result, the narrative theory of asset bubbles developed in this final chapter serves as a broader explanation of how large-scale asset bubbles, particularly those related to the introduction of a new technology, can emerge, develop, and grow.

CHAPTER 5: THE TECH BUBBLE'S EVENT HISTORY

In this chapter, I trace the key events, actors, policies, practices, and institutions associated with the U.S. tech bubble. While such an account could be described in great detail and at great length, such a task has already been attempted to varying degrees by a number of researchers (e.g., Fleckenstein and Sheehan, 2008; Kindleberger and Aliber, 2011; Lowenstein, 2004; Shiller, 2005). Thus, my attempt here is merely to establish the key or critical events associated with the episode. These events will then be used a backdrop to the following narrative and discourse analysis to ensure that the meanings of various discourses are appropriately rooted in their historical context. In Chapters 9 and 10, I analyze the connections between events and discourse in order to develop a processual story of the tech bubble and a narrative theory of asset bubble formation.

As stated in the previous chapter, data was collected from the years 1987 to 2000 to allow analysis of the historical emergence and institutionalization of the boom narrative in technology stocks. In addition, I also note some economic, social, and cultural trends leading into the late 1980s. These trends allow for a broader perspective on the discourses that eventually emerged in the 1990s.

A starting point for understanding the (re)emergence of interest in stocks is to consider the long-term performance of stocks in the decades leading up the bull run of the 1990s. Figures 5.1 and 5.3 on the next page show stock performance from the Dow Jones and S&P 500 indexes going back to 1937, just after stocks hit their low point following the crash of 1929. Figure 5.2 provides historical data on the tech-heavy NASDAQ, which was founded in 1971.

A few initial observations can be made. First, dating back to the 1930s, the United States had been relatively bubble-free until the bull run of the 1990s. While the 1960s saw a run-up in stock prices, these gains were brief and only look impressive when comparing them to the lows of the 1930s and 1940s.

As explained by Lowenstein (2004, pp. 1–2), in the 1970s, the general public lost most of what little interest they had in stocks. Wall Street was rarely covered by the mainstream media, 90 percent of pension funds were invested in bonds, bills, and cash, and by the end of the decade, the number of Americans who owned stocks would fall by seven million. Lowenstein (2004) notes that, even absent any large-scale crash or market panic, after adjusting for inflation, in 1976 stocks were down almost two-thirds over the previous ten years.

Figure 5.1 Dow Jones Industrial Average, January 1937–January 2003

Figure 5.2 NASDAQ, August 1971–January 2003

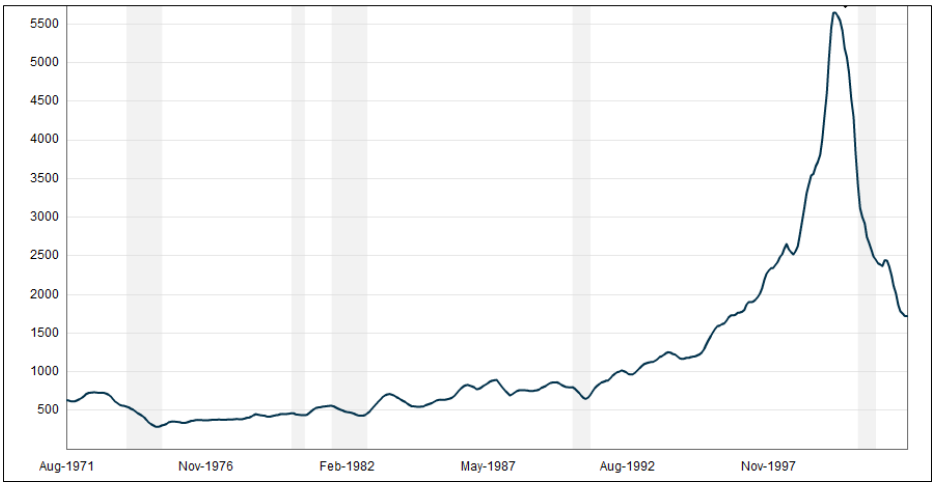


Figure 5.3 S&P 500, January 1937–January 2003

Source for three graphs: Macrotrends (data is inflation-adjusted using the headline CPI, vertical grey areas indicate recessions, see www.macrotrends.net for additional information on their sources)

Second, while the 1980s witnessed a brief reemergence of interest in stocks, price gains in this decade were extremely tame compared to the excesses of the 1990s, particularly when looking at the NASDAQ's performance. A few events of the 1980s, however, warrant mentioning. In 1981, the 401(k) pension account was created, which gave the general public much greater control over their retirement savings than traditional pension plans, which in turn led to the general public being more exposed to, and acquiring a greater knowledge of, stocks (Shiller, 2005).

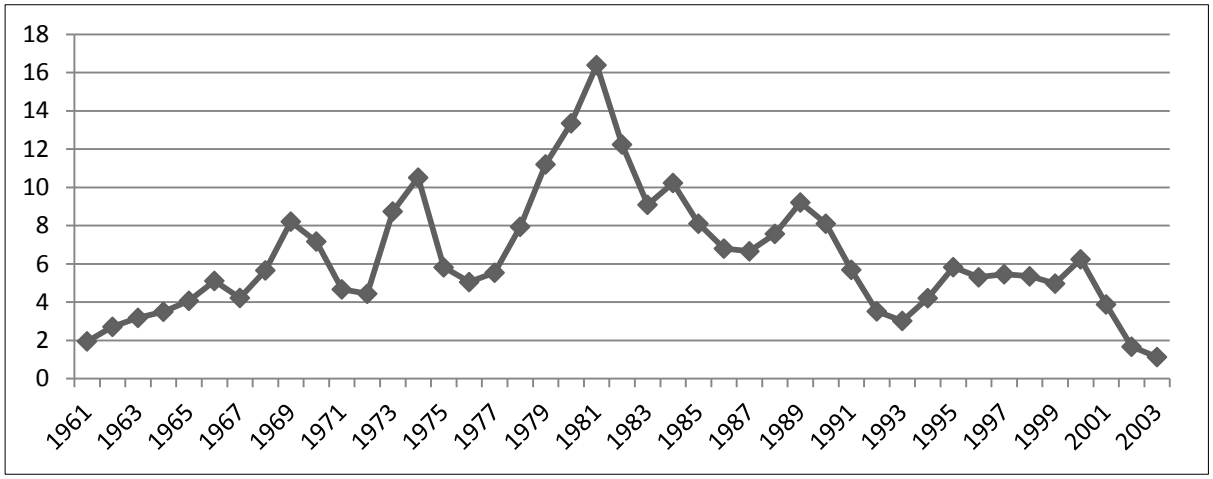
The spread of the "hostile takeover" in which one company acquires another despite the objections of the acquired company's management team, alongside the popularity of leveraged buyouts (LBOs), led to Chief Executive Officers (CEOs) being much more concerned with low stock prices than they would have been in previous decades (Lowenstein, 2004). The Federal Reserve, still wrestling with the runaway inflation of the 1970s, raised interest rates (the federal funds rate, see Figure 5.4 on the next page) to over 16 percent in 1981 and then raised rates again at the end of the decade.

By the end of the decade, three other important events had occurred. In August of 1987, Alan Greenspan would become Chairman of the Federal Reserve, a position he would hold until January of 2006. Two months after his appointment, worldwide markets crashed, with the Dow Jones dropping by over 22 percent and markets in Hong Kong and Australia dropping by over 40 percent. These drops, however, were relatively short-lived from a historical perspective, as seen in Figures 5.1 and 5.3. Lastly, in 1989 the world witnessed the fall of the Berlin wall, which became a symbol to much of the Western world that capitalism—and its key tenet of the private ownership of property— had finally and officially triumphed over communism.

Adding to this sentiment, the Soviet Union was officially dissolved in December 1991. Shiller (2005) notes that alongside the fall of these communist powers was the concomitant decline in labor unions in the U.S., where union membership declined from 20 percent of the workforce in 1983 to 13.5 percent of the workforce in 2000. The early 1990s witnessed another brief recession, which Alan Greenspan and the Federal Reserve responded to by cutting interest rates several times in 1990 and 1991, as rates plunged from nine percent in 1989 to three percent in 1992.

The drop in interest rates coincided with the baby boomer generation moving more and more of their retirement savings out of certificates of deposit (CDs) and bonds and into stocks to replace disappearing yields (Fleckenstein and Sheehan, 2008). At the same time, the use of 401(k)'s doubled in the early 1990s, from a nationwide investment of $400 billion in 1990 to $800 billion in 1995 (Lowenstein, 2004).

Figure 5.4 Yearly Federal Funds Rate, as a percent, 1961–2003



Source: U.S. Federal Reserve

This increased enthusiasm for stocks led to gains of approximately 50 percent in the Dow Jones, NASDAQ, and S&P 500 (see Figures 5.5, 5.6, and 5.7 on the next page) from 1990 to 1995. The Federal Reserve responded by raising interest rates to six percent by April of 1995.

Additionally, in December of 1996, Greenspan famously questioned whether "irrational exuberance" was at play in current market valuations[15].

In spite of Greenspan's rhetoric, the period of 1995 to 2000 saw dramatic returns for all major stock indexes, including a doubling of the Dow Jones and S&P 500 and a near quadrupling of the NASDAQ. These dramatic changes in stock prices coincided with significant changes in numerous business, political, social, and cultural arrangements and practices.

One such change was the dramatic increases in executive pay, which was partially fueled by the growing popularity of using stock options as part of CEO compensation. As an illustrative example of pay increases, Lawrence Coss, CEO of Green Tree Financial, a company that financed mobile home purchases, took a bonus for just the fiscal year ending in 1996 of over $100 million (Lowenstein, 2004). Over the decade, CEOs, who also frequently served as Chairman of the Board of Directors, would become household names and celebrities in the financial media (ibid.).

[15] The precise quote from Greenspan is "But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?" When viewed in its entirety, this quote is actually not quite a "warning" as it is commonly labeled but rather a rhetorical question. This quote is from a speech entitled "The challenge of central banking in a democratic society," which was delivered on December 5, 1996 at the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research in Washington, D.C. It is available on the Federal Reserve's website at www.federalreserve.gov.

Figure 5.5 Dow Jones Industrial Average, January 1990–December 2000

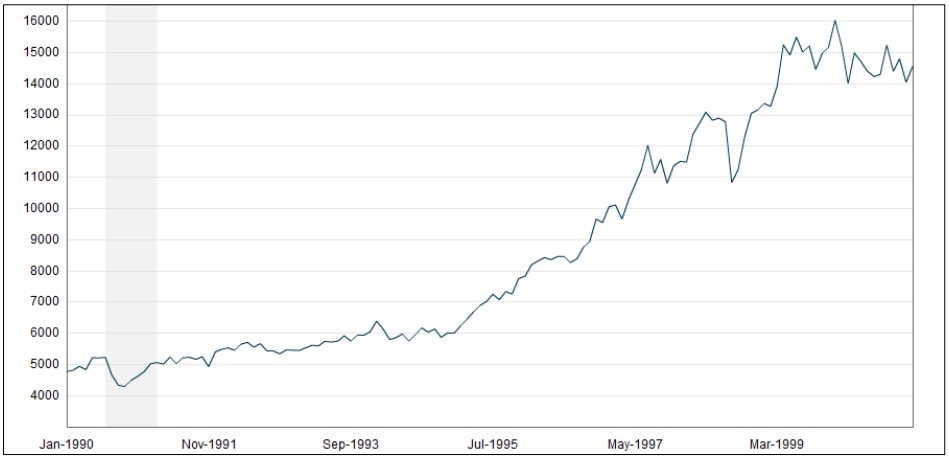


Figure 5.6 NASDAQ, January 1990–December 2000

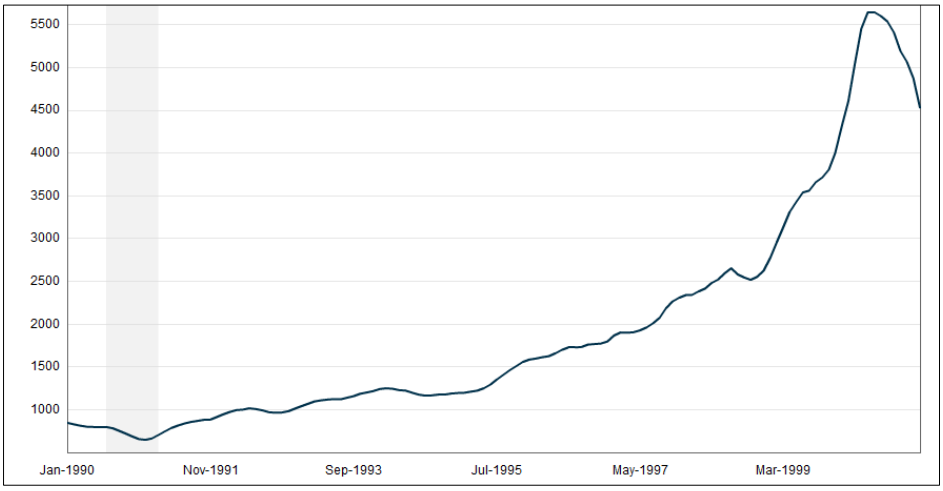
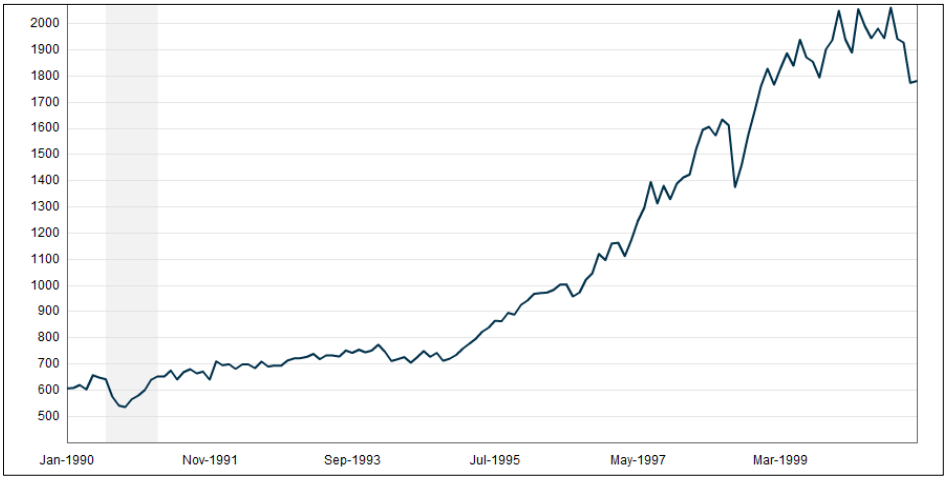


Figure 5.7 S&P 500, January 1990–December 2000



Source for three graphs: Macrotrends (data is inflation-adjusted using the headline CPI, vertical grey areas indicate recessions, see www.macrotrends.net for additional information on their sources)

The payoff was across the country, and by 1997 CEOs on average were making 326 times what a factory worker was making (Reingold, 1997). In response to the confusion surrounding how options were accounted for, in 1994 the U.S. Securities and Exchange Commission (SEC) proposed a rule that would have required companies to deduct the cost of options from their reported earnings, but the proposal was eventually shelved.

The reluctance to enforce strict rules on options reporting was a sign of the times, with the late 1990s also giving rise to numerous innovations in accounting and finance. Of particular influence were innovations in the use of derivatives and special purpose vehicles (SPVs)[16]. The use of such devices became common practice and resulted in annual reports becoming incredibly complicated and difficult to understand for most investors.

In 1998, the Commodity Futures Trading Commission (CFTC) proposed to study whether derivatives should be regulated in a manner similar to common stock, but the proposal was quashed by Greenspan and Robert Rubin, the U.S. Secretary of Treasury at the time (Schlesinger, 2002). Eventually, many companies were found guilty of using such devices to improve short-term performance and smoothen out corporate earnings (and in effect defraud investors), an art perfected by corporations such as Enron and WorldCom.

Problems with financial innovations were eventually unveiled alongside the discovery that many auditors and analysts had a severe conflict of interest with their clients in which auditing services and stock recommendations were being used primarily to win more lucrative consulting and investment banking contracts. A 1999 SEC proposal to clamp down on such arrangements was similarly thwarted, this time by Congress (Lowenstein, 2004). Also in 1999, the Glass-Steagall Act, which separated banking, insurance, and underwriting activities, was repealed.

Many of the changes that occurred during these years were pro-business in nature, particularly in the United States. From 1995 to 1999, interest rates were cut from six percent to under five percent. Alan Greenspan's lowering of rates after the LTCM and Russian ruble crisis of 1998 came to be known as the "Greenspan Put," referring to the belief by market participants that Greenspan was willing to increase liquidity by whatever means necessary in order to prevent the stock market from declining. Such cuts were partially made possible by several changes in how the rate of inflation was calculated, with the Boskin Commission's recommendations leading to several

[16] A derivative is a contract between parties whose value is based upon an underlying instrument such as a specific interest rate, exchange rate, or stock price. An SPV is a subsidiary company structured so that its obligations are secure even if the parent company goes bankrupt. SPV's are often used as a counterparty for derivatives and to isolate financial risk.

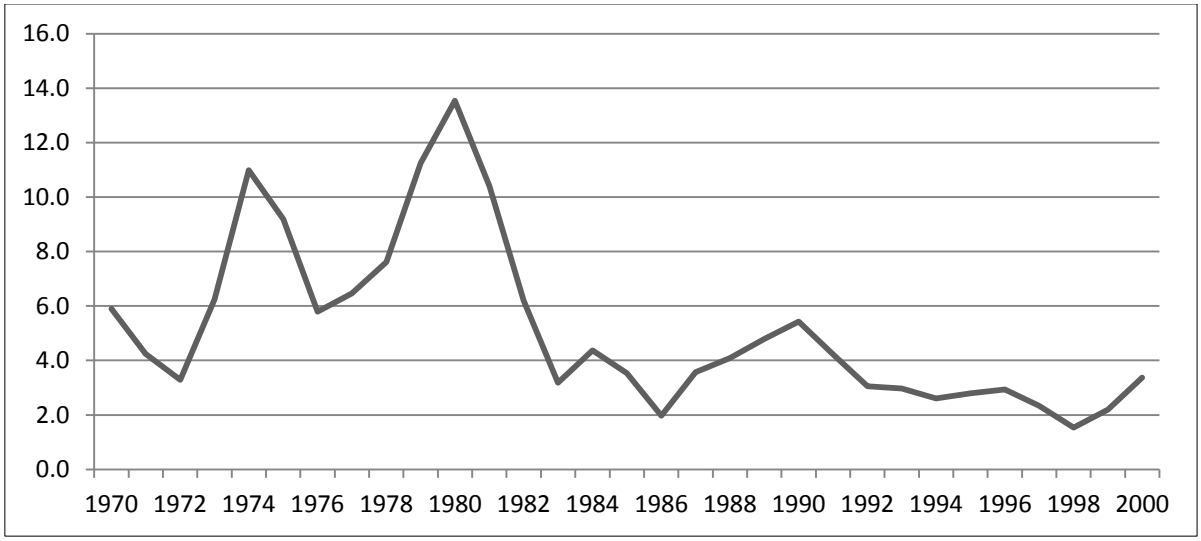
changes that all resulted in a reduction in the rate of inflation, which remained relatively low for the decade (Fleckenstein and Sheehan, 2008, pp. 39–43, see also Figure 5.8 at the bottom of this page).

The popping of bubbles in Southeast Asia and Mexico led to a surge in funds to the United States (Kindleberger and Aliber, 2011), while the Republican-controlled House of Representatives proposed cuts to capital gains taxes, resulting in a cut from 28 percent to 20 percent in 1997. All of these events coincided with a remarkable growth in the number of mutual funds, which went from a mere 340 in the United States in 1982 to over 3,500 by 1998 (Shiller, 2005).

However, no change would shape the late 1990s nearly as much as the widespread innovations in computing, internet services, and telecommunications[17]. The World Wide Web first appeared in the news circa 1993 (Shiller, 2005), with PC sales and internet usage taking off shortly thereafter. Concurrently, around 1995, markets started to take off. U.S. stock prices rose at an annual rate of over 30 percent in 1995 alone.

In 1996, the telecommunications industry was deregulated by Congress, and over the next five years telecommunications companies would borrow over $1.5 trillion from banks plus another $600 billion in bonds and still billions more in stock—most of which was used to construct (somewhat redundant) fiber optic networks across the country (Lowenstein, 2004).

Figure 5.8 U.S. Consumer Price Index, 1970–2000
(annual average of 12-month percent changes, all urban consumers)



Source: U.S. Bureau of Labor Statistics

[17] While the dotcom bubble and telecommunications bubble are sometimes referred to separately, in this thesis they are treated as parts of the larger technology bubble. As investment in telecommunications was in large part to construct fiber optic cables to support growing internet usage, the two bubbles are in fact inseparable.

By 1998, venture capital was pouring into dotcom companies with reckless abandon, as venture capital funding surged from $3 billion in 1990 to $60 billion in 1999 (Lowenstein, 2004, see his citation on p. 110). Concomitantly, hedge funds and mutual funds became heavily invested in publically-traded technology stocks (Brunnermeier and Nagel, 2004; Griffin *et al.*, 2011). Fueling this enthusiasm over young companies was the incredible IPO valuations and gains these companies were achieving, often with very little revenue or profit supporting such valuations. For instance, theglobe.com, a website that helped people build home pages, saw its stock rise from $9 a share to over $60 a share on its first day of trading, a gain of over 600 percent (Fleckenstein and Sheehan, 2008). Such a share price put the company's valuation at over $5 billion, despite the company having only reached $2.7 million in revenues for the first three quarters of that year (ibid.). Three years later, theglobe.com filed for bankruptcy.

By the end of 1999, market speculation was widespread. The Dow Jones was up 25 percent on the year, mostly due to the performance of "new economy" tech stocks, while the NASDAQ nearly doubled. At the end of the year, the price-to-earnings (P/E) ratio of the NASDAQ was 200, compared to Japan's market peak of 80 a decade earlier (Fleckenstein and Sheehan, 2008). That is not to say that speculation was limited to tech stocks, with over half of the S&P 500 index exhibiting at least some bubble-like behavior (Anderson, Brooks, and Katsaris, 2010).

Stock turnover[18] was high as well, reaching well over 200 percent by 1999, compared with just 88 percent in 1990 (Shiller, 2005). This increase in turnover came with a dramatic decline in the cost of trading and a large increase in the number of "day traders," referring to individuals and institutions that buy and then sell stocks within the same trading day, thereby closing all positions by the close of business (ibid.). The increase in day traders also coincided with the increased popularity of finance programming, particularly the business news station CNBC (Fleckenstein and Sheehan, 2008). Despite the household savings rate reaching a new low, fortunes were being made on the market and unemployment dropped to under four percent (see Figure 5.9 on the next page). Thus, the country as a whole was in a rather euphoric state.

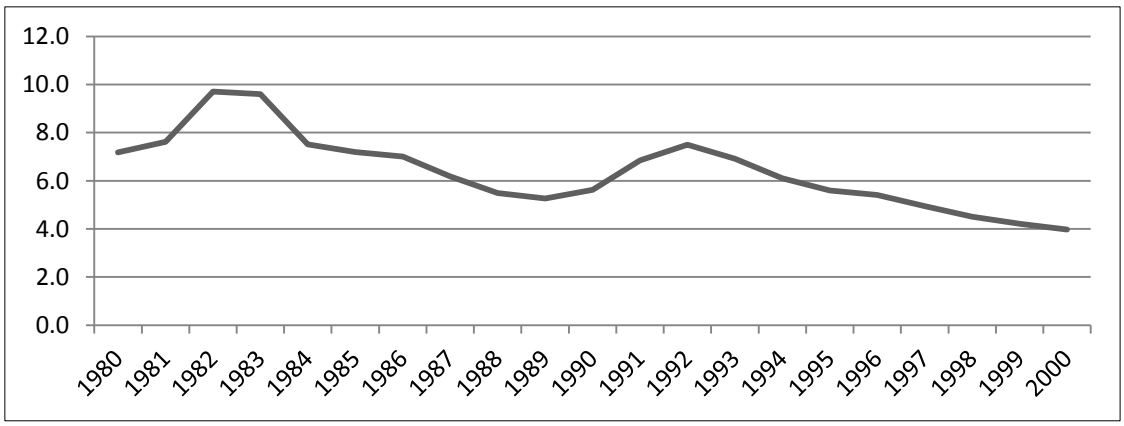
By the end of the year and early 2000, however, there were also salient cracks in the euphoric wall that was built. The Federal Reserve injected $50 billion into the financial system over Y2K concerns (the concern of systemic computer failure when clocks rolled over to the year 2000) but

[18] Stock or share turnover is a measure of how frequently a share is traded. It is calculated by dividing the total number of shares traded by the average number of shares available during a given period. A high share turnover means the stock is (or at least was) easier to buy and sell.

then also raised interest rates to over six percent in early 2000. Margin debt[19] was at its highest level since 1929, and nearly three times as high as in October of 1987 (Fleckenstein and Sheehan, 2008). By April of 2000, stocks started to crack, with the NASDAQ dropping by almost 10 percent in one day. In these early days of the bubble's bursting, hedge funds and mutual funds dramatically shifted strategy, with many turning into aggressive sellers of tech stocks (Brunnermeier and Nagel, 2004; Griffin *et al.*, 2011).

In 2001, the party ended, with the NASDAQ dropping from its high of over 5,000 to under 2,000. Within two years, over $5 trillion in paper wealth was wiped out on the NASDAQ, with the market value of NASDAQ companies peaking at $6.7 trillion in March 2000 and bottoming out at $1.6 trillion in October of 2002 (Gaither and Chmielewski, 2006). Similar, although not quite as dramatic, falls were seen in other U.S. and foreign stock indexes. The list of dotcom busts from these years, also referred to as "dot-bombs," is rather lengthy. For instance, Boo.com, an online fashion store backed by J. P. Morgan and Goldman Sachs, spent over $180 million in just a few months but then went bust in May of 2000 (Sorkin, 2000). InfoSpace, whose founder Naveen Jain claimed the company would become a monopoly in wireless Internet, saw its share price plummet from over $1,300 a share in March of 2000 (which gave the company a greater valuation than Boeing) to just over $20 a share by April 2001 (Heath and Chan, 2005). Perhaps the darling of the dot-bomb bunch, Pets.com, which was founded in August of 1998 and sold pet supplies online, closed in November of 2000 after burning through roughly $300 million in investment funds (Haig, 2005).

Figure 5.9 U.S. unemployment rate (annual average), 1980–2000



Source: U.S. Bureau of Labor Statistics

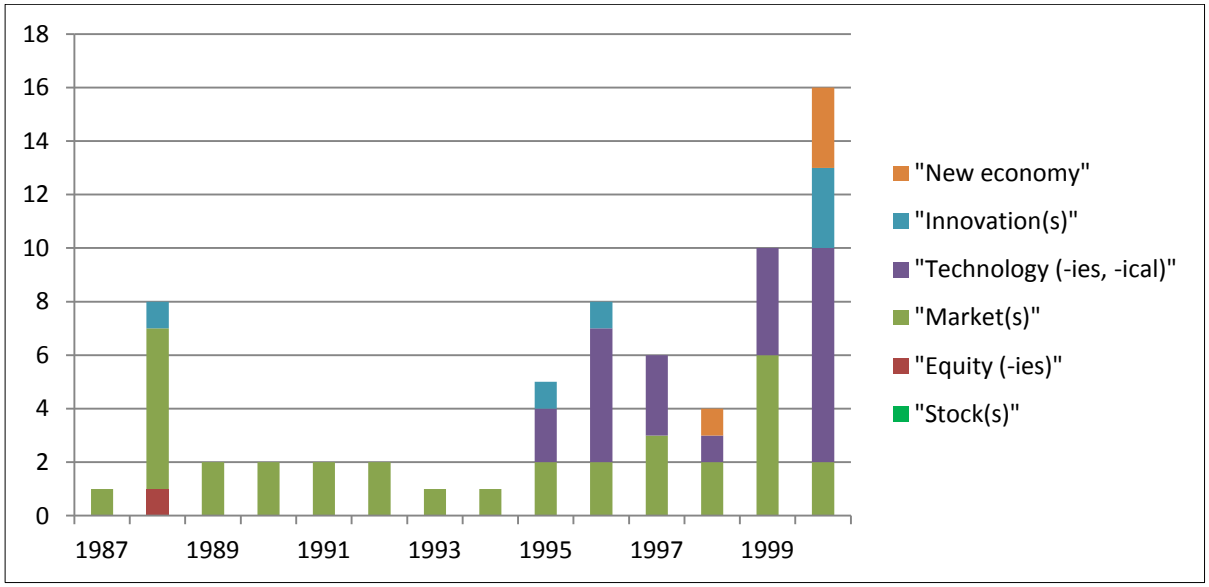
[19] Margin debt is debt obtained by borrowing from a brokerage firm to make an investment. For instance, if an investor borrows $5,000 from his or her brokerage firm to make a $20,000 investment, margin debt is 25 percent of the investment. If the share price of that investment were to drop past a certain point, the brokerage firm can require the investor to deposit more cash or sell some of the shares, which is referred to as a margin call. If investors are optimistic about future stock prices, they are incentivized to increase their margin debt as they anticipate that gains from share prices will be far greater than the interest charged on margin debt.

CHAPTER 6: THE TECH BUBBLE'S COGNITIVE PILLAR

This chapter presents findings from the cognitive pillar of institutionalization, which establishes the prevailing orthodoxy and perceived rationality. Cognitive sources of institutionalization can be extreme powerful as support for them tends to become unconscious and unquestioned over time. For this study, the cognitive pillar was represented by U.S. Federal Reserve speeches. From 1987 to 2000, there were 495 speeches made by Federal Reserve officials. The findings from the initial sampling stage are presented in Figure 6.1 below.

A few initial observations can be made from this preliminary search. First, the words "stock(s)" and "equity (-ies)" rarely appear in these titles, with only one match coming from the year 1988. However, the word "market(s)" frequently comes up, suggesting that various forms of markets have always been the concern of the Federal Reserve. In contrast, references to technology, innovation, and the new economy did not truly start until 1995. All three of these areas received the most attention in 2000, as judged through speech titles.

Figure 6.1 Keywords in speech titles (by count),
speeches by U.S. Federal Reserve officials, 1987–2000



Source: U.S. Federal Reserve

Note: These keywords were searched in all 495 speeches made by Federal Reserve officials from 1987 to 2000. While each title could include two or more keywords (for example, "equity markets" contains both "equity" and "market"), no keyword was counted twice in the same title (no relevant cases were found for this situation).

The 65 speeches that included these keywords thus became the sample data for this chapter, with those speeches representing 13 percent of all Federal Reserve speeches from 1987 to 2000. Appendix 1 provides the reference information for each of these 65 speeches, along with their citation codes that will be used throughout this chapter.

The findings from this sample are presented in two sections below. First, I provide the results of the third stage of analysis, which was the creation of a narrative database. I report on all four steps of analysis in this stage and provide representative examples of quotations, which illustrates the coding process, for each step.

Second, I provide the results of the fourth stage of analysis, which was a more open investigation into the institutional features of the pillar. Included in this section is a discussion of why efforts to deinstitutionalize the tech bubble's boom narratives failed.

6.1 Narrative analysis

Results from the first step of analysis in this section, categorizing each speech's connotation of the U.S. economy and/or companies, are provided in Figures 6.2 and 6.3 on the next page, along with a selection of quotations and topics for each connotation in Table 6.1 on the following page.

Figures 6.2 and 6.3, which are best understood in tandem, can be described in four general phases. First, the period from 1987 to 1988 included a large proportion of negative connotations and only one speech with a positive connotation. Second, the period from 1989 to 1993 was evenly dispersed with a few positive, negative, mixed, and neutral connotations.

Third, the period from 1994 to 1996 was dominated by mixed speeches, with just a few positive connotations in 1996 and no negative or neutral connotations. Lastly, the period from 1997 to 2000 saw a large increase in positive connotations along with a few mixed connotations and only one negative and one neutral connotation.

The quotations and topics in Table 6.1 are organized according to these four phases, providing the reader with a better glimpse into the general trends in discourse of the U.S. economy at the Federal Reserve from 1987 to 2000.

Figure 6.2 Connotation of U.S. economy/companies (by count), sampled speeches by U.S. Federal Reserve officials, 1987–2000

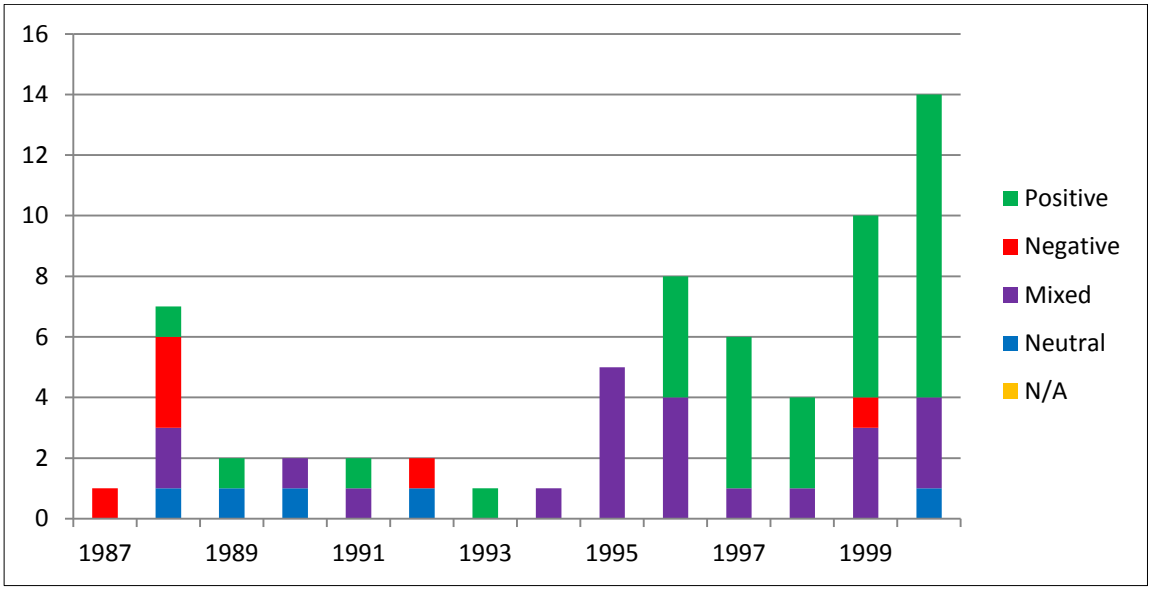
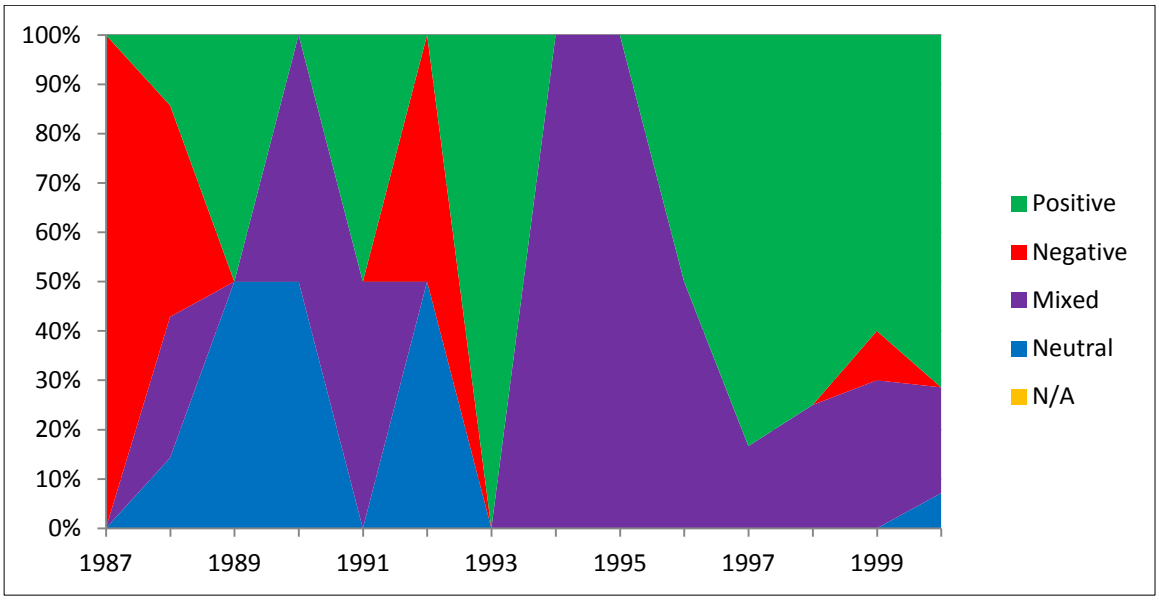


Figure 6.3 Connotation of U.S. economy/companies (by percentage), sampled speeches by U.S. Federal Reserve officials, 1987–2000



Note: Each of the 65 Federal Reserve speeches sampled was categorized according to one, and only one, of the five connotations. The reader may note that Figure 6.2 does not exactly match the count of that in Figure 6.1 for the years 1988 and 2000. This is because those years included speeches with more than one keyword in a title. Hence, those speeches were double counted in Figure 6.1 but only categorized one time in Figure 6.2.

Table 6.1 Selected quotations and topics for each U.S. economy connotation[20] (sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Connotation	Quotations and topics (1987–1988)	Quotations and topics (1989–1993)	Quotations and topics (1994–1996)	Quotations and topics (1997–2000)
Positive	"…if one allows for differences in accounting, economic, and risk factors, returns to investors in these three important markets [the U.S., the U.K., and Japan] are broadly comparable." -Greenspan, Nov. 30, 1988	"Nations with well-functioning market systems have provided consistently higher living standards for their citizens by more effectively unleashing the creativity of their people…" -Greenspan, Sept. 24, 1991	"…an economic recovery that has been running for more than five years…the macroeconomic data seemingly imply—economic success, tranquility, and progress." -Greenspan, June 6, 1996	"Even the most optimistic of forecasters could not have anticipated such a favorable confluence of economic events." -Ferguson, May 9, 2000
Negative	"…we find only a single American bank among the ten largest in the world. Every year, the situation is getting worse instead of better." -Heller, Mar. 6, 1987	"One of the most disturbing elements of the current subpar recovery has been the extraordinary debilitation of our financial intermediation process…" -Greenspan, Nov. 18, 1992	No such speeches during this period	"Moreover, there will probably never be a time when calm and normalcy reign throughout the world and the time is auspicious for major reform of the financial system." -Rivlin, Mar. 1, 1999
Mixed	"… is a tribute to the resilience and adaptability of our financial markets and economy…these events have not only caused severe contemporaneous problems…" -Greenspan, Oct. 11, 1988	"This year's symposium is being held at a time of great promise, yet great challenge, for the world economic order." -Angell, May 23, 1991	"The processes of growth, globalization, and innovation have continued…Other developments, including the financial problems of banks…have posed serious challenges." -Greenspan, Nov. 18, 1996	"Higher prospective rates of return from the application of the newer technologies has led to a surge in business capital spending… Recently, wariness about risk again has increased..." -Greenspan, Dec. 5, 2000
Neutral	Technical analysis of intraday funds -Angell, Nov. 2, 1988	Speech on Latin American countries -Kelley, May 4, 1992	No such speeches during this period	Technical speech concerning retail payments system -Ferguson, Oct. 11, 2000

[20] Note: These selected quotations and topics are not the only reason a speech was categorized as such but rather are representative of the reasoning for a categorization. Nor are these quotations intended to be "best examples" that demonstrate the category better than quotations from other items. They are merely intended to be representative of the type of discourse that was prevalent amongst a given category.

The second step of analysis, mapping each speech's U.S. economy narrative, revealed six distinct yet highly interrelated narratives, which are outlined in Table 6.2 on the next two pages. On the following page, Figures 6.4 and 6.5 present the frequency trends of these narratives over the sampled period.

The first narrative to emerge, "Economic Competitiveness," stresses the (in)ability of the U.S. economy and U.S. companies to compete with foreign rivals, as these companies rightfully strive to maximize profits and dominate domestic and foreign markets. The narrative sees domestic regulations and international protectionism as crucial impediments that prevent U.S. companies from achieving these goals. This narrative was prevalent in 1987 and 1988 but disappeared thereafter.

The second narrative to emerge, "Economic Stability," which took over in 1988 after the crash of 1987, focuses on ways to strengthen and stabilize the U.S. economy, all in a context of fair market competition. In this view, while regulations can be helpful in ensuring stability, they can also be harmful in handicapping domestic companies. As speculation, moral hazard, and unfair advantages pose major threats, international accords, such as the Basel Accords, and institutions such as the Federal Reserve play increasingly important roles.

This narrative quickly transitioned into the "Economic Growth" narrative that was by far the most common in the sampled texts, particularly during the early 1990s. This narrative stresses economic growth, returns to investors, and rising standards of living as primary objectives. International markets and foreign investors are seen as key contributors to such growth, while central planning and monopolies pose major threats.

In 1996, a "Structural Shift" narrative emerged, which sees the U.S. economy undergoing a major transformation, largely propelled by numerous technological advances such as in computing and telecommunications, satellites, and new financial products. The major impediment to this shift is a lack of skills and education in these new technologies amongst the workforce.

Two years later, the "New Economy" narrative started to replace the Structural Shift narrative, arguing that the U.S. economy was now heading towards a new type of system in which old economic rules could be thrown out in favor of new and exciting possibilities, in particular the coexistence of rapid economic growth alongside low rates of inflation. A flexible labor force and world class higher education are seen as primary drivers of this change, while "immutable" human nature and market imbalances, including bubbles, are seen as major impediments.

Table 6.2 U.S. economy/company narratives (sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Narrative	Object	Destinator	Key enabling forces[21]	Key impeding forces	Selected quotations
Economic Competitiveness	• International competitiveness and superiority	• Profit motives • Laissez-faire capitalism	• Deregulation • Innovation • World trade	• Outdated regulations (such as Glass-Steagall) • Protectionism • International competition • Capital requirements	"The banks, the regulators and Congress can cooperate to reduce and, hopefully, eliminate any remaining international competitive inequities." -Heller, May 9, 1988
Economic Stability	• Stability • Efficiency • Competitiveness	• Fair competition • Laissez-faire capitalism • Prevalent market turbulence	• Regulations (such as banking firewalls) • Deregulation • Technology/innovation • Global accords (Basel) • Diversification • Institutions	• Market volatility and speculation • International competition • Protectionism • Outdated regulations	"More adequate capital, risk-based capital, and increased securities powers for bank holding companies would provide a solid beginning for our efforts to ensure financial stability." -Greenspan, Oct. 11, 1988
Economic Growth	• Growth • Return on investment (ROI) • Efficiency • Rising living standards • Stability	• Laissez-faire capitalism • Global competition	• International markets and foreign investment • Deregulation • Technology/innovation • Diversification • Institutions/culture • Healthy regulations • Risk management	• Diverging economic policies • Inflation • Wasteful regulations • Monopolies/cronyism • Protectionism • Risks (payment risks) • Excessive debt	"First and foremost has been the growing recognition of the importance of price stability to the achievement of sustainable maximum economic growth." -Greenspan, April 11, 1995 "Competition is what has raised our standards of living for generations." -Greenspan, Nov. 18, 1996

[21] Note: The columns for enabling and impeding forces are by no means exhaustive of every factor mentioned in the 65 speeches. Rather, they make note of the commonly cited and stressed factors in the sample, while efforts were made to place the most commonly cited factors at the top of each list. A detailed counting of factors in this sample was deemed unnecessary as the subjectivity and time required in such a task would have far outweighed any potential benefit in terms of theoretical insight.

Table 6.2 U.S. economy/company narratives (sampled speeches by U.S. Federal Reserve officials, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Structural Shift	• Structural shift • Radical transformation • Progress and growth	• Increased living standards • Laissez-faire capitalism • Competition	• Technological advances (computers, telecom, satellites, financial) • Shareholder focus • Deregulation • Global competition • Venture capital • Risk management	• Lack of skills and education • Inflation • Burdensome supervision • Protectionism • Systemic risks	"… one of those rare, perhaps once-in-a-century events—a structural technological advance. The advent of the transistor and the integrated circuit and…the emergence of modern computer, telecommunication, and satellite technologies have fundamentally changed the structure of the American economy." -Greenspan, June 6, 1996
New Economy	• "New economy" • Unprecedented growth alongside low inflation	• "Wheels of progress" • Technological shift • Laissez-faire capitalism	• Technology (such as microprocessor) • Political stability • Free global trade • Flexible labor force • Deregulation • World class education • Prudent fiscal policy	• Human nature as "immutable" • Global stress • Bubbles/imbalances • Inflation • Protectionism	"… our advanced economy is primarily driven by how human psychology molds the value system that drives a competitive market economy. And that process is inextricably linked to human nature, which appears essentially immutable...But having said that, important technological changes…are altering, in ways with few precedents, the manner in which we organize production, trade across countries, and deliver value to consumers." -Greenspan, Sept. 9, 1998
Economic Transition	• Transition • "Shakeup" • Sustainable growth	• Economic laws • Unsustainable growth	• Optimism • Consumer confidence • Innovation • Sound banking system • Well-functioning capital markets	• "Untoward events" • Inflation (especially higher energy prices)	"In periods of transition from unsustainable to more modest rates of growth, an economy is obviously at increased risk of untoward events that would be readily absorbed in a period of boom." -Greenspan, Dec. 5, 2000

Figure 6.4 U.S. economy/company narrative (by count),
sampled speeches by U.S. Federal Reserve officials, 1987–2000

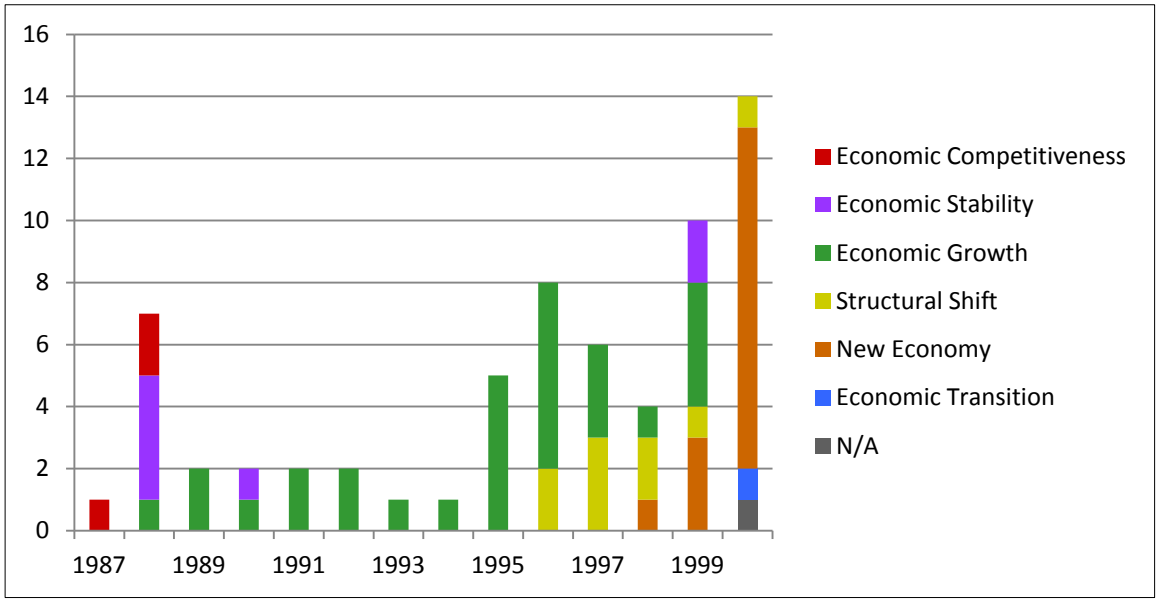
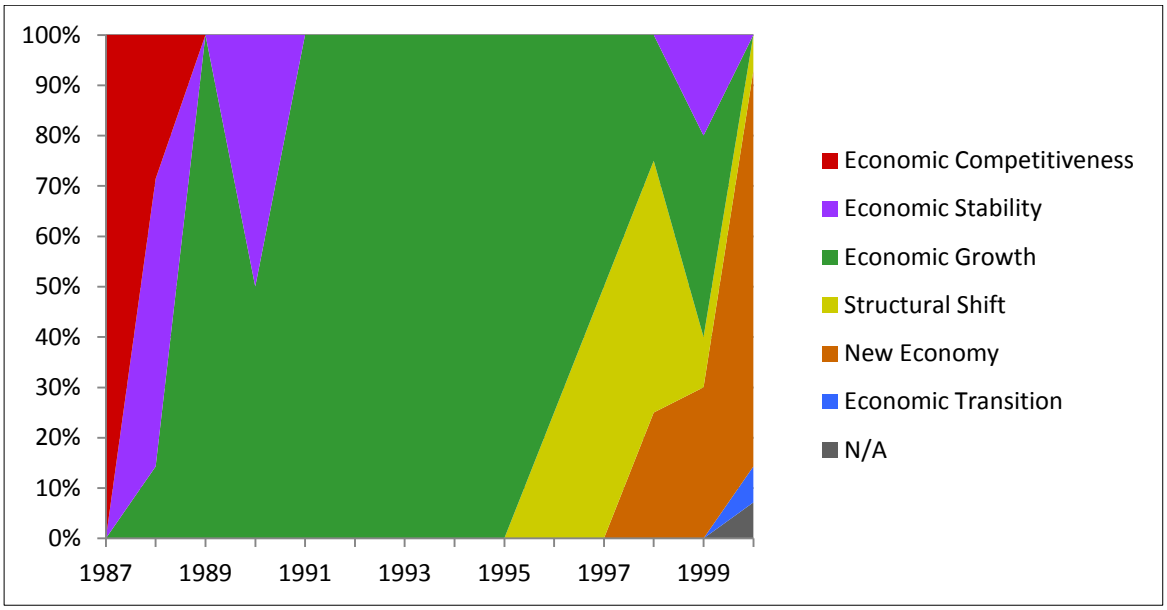


Figure 6.5 U.S. economy/company narrative (by percentage),
sampled speeches by U.S. Federal Reserve officials, 1987–2000



Note: Each of the 65 Federal Reserve speeches was categorized according to one, and only one, of the six narratives, except for speech #62 (Ferguson, Oct. 11, 2000), which did not possess a full narrative of the U.S. economy or U.S. companies and hence was coded as N/A.

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The final narrative to emerge, "Economic Transition," was found in only one speech: the last speech in the sample. In this speech, Greenspan observes that the U.S. is undoubtedly entering a period of "shakeup" and transition, where the old laws of supply and demand will determine which companies fold and which survive. He stresses that optimism and consumer confidence are paramount in this transitory phase, while "untoward events" such as market disruptions can now pose major threats. The next section, Section 6.2, offers further discussion of the interrelationships and discursive features of these narratives.

In step three, categorizing each speech's connotation of technology and innovation, three general phases can be described. As seen through Figures 6.6 and 6.7 on the next page and Table 6.3 on the following page, the period from 1987 to 1993 included a large number, approximately half, of speeches with no connotation of technology or innovation. Then, in 1994 and 1995, all six sampled speeches possessed a mixed connotation of technology, in which these speeches drew attention to both the new efficiencies and products created by technological advancements and the new complexities and dangers of such advancements.

Afterwards, from 1996 to 2000, the vast majority of speeches possessed a positive connotation of technology and innovation, often drawing attention to its critical role in the nation's unprecedented rate of economic growth. The sampled texts included no speeches with negative or neutral connotations of technology.

In step four, three tech company narratives and two U.S. stock narratives emerged from the data. Interestingly, from 1987 until 1995, no speech included a full tech company or U.S. stock narrative. Then, in 1996, a narrative of "Technological Dominance" emerged, which was by far the most common narrative in this step. This narrative sees tech firms as seeking market dominance, high market valuations, and diversification, which is all made possible in the context of a profound shift in the economy. The key enablers include constant innovation and technological synergies, while factors such as new upstarts and a lack of skills impede tech companies and their ambitions.

In 2000, one speech possessed a narrative of "Technological Uncertainty," which views tech companies as only able to provide highly uncertain returns, with difficulties in reducing costs and increasing revenue posing as major obstacles. Then, in the final sampled speech, a narrative of "Technological Shakeup" emerged, in which tech companies were inevitably heading towards a shakeup caused by the context of overly exuberant market players.

Figure 6.6 Connotation of technology/innovation (by count), sampled speeches by U.S. Federal Reserve officials, 1987–2000

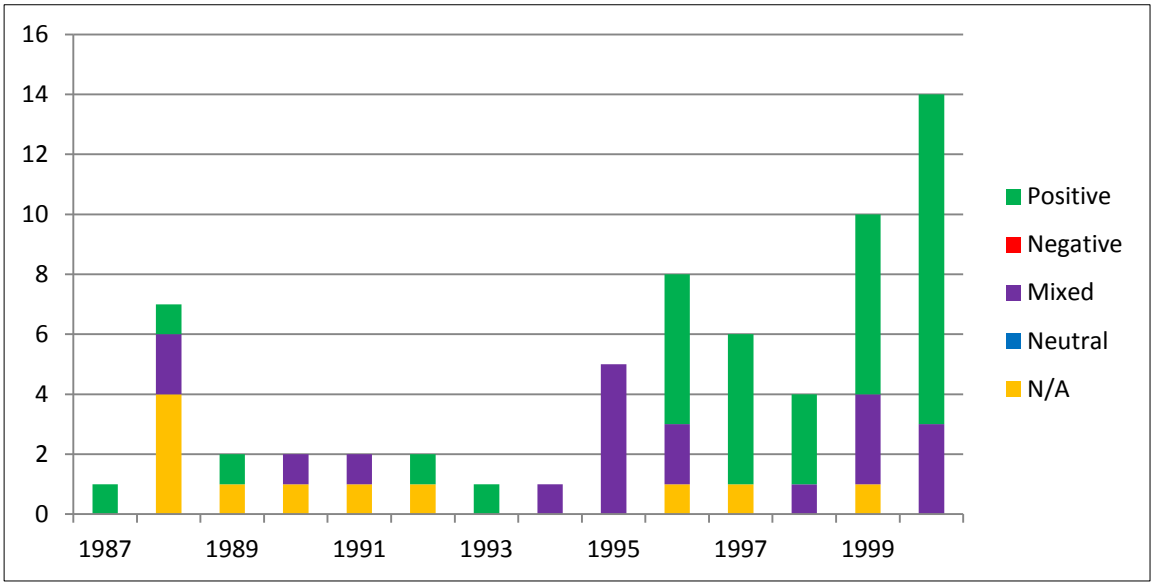
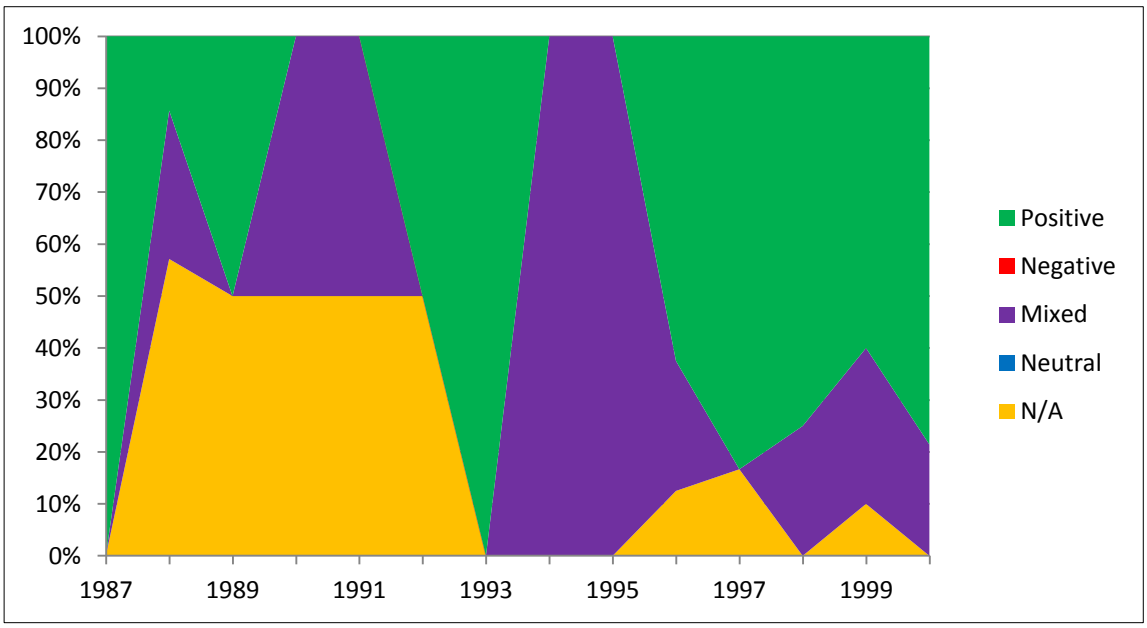


Figure 6.7 Connotation of technology/innovation (by percentage), sampled speeches by U.S. Federal Reserve officials, 1987–2000



Note: Each of the 65 Federal Reserve speeches sampled was categorized according to one, and only one, of the five connotations.

Table 6.3 Selected quotations and topics for each technology connotation (sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Connotation	Quotations and topics (1987–1993)	Quotations and topics (1994–1995)	Quotations and topics (1996–2000)
Positive	"…technological change is spurring globalization, cheaper and faster information and telecommunications systems have been powerful contributors to the rapid development of international financial markets." -Greenspan, Nov. 30, 1988	No such speeches during this period	"On the one hand, the evidence of dramatic innovations—veritable shifts in the tectonic plates of technology—has moved far beyond mere conjecture." -Greenspan, Jan. 13, 2000
Mixed	"These technological developments, which are especially well-suited to securities markets, have lowered transactions costs appreciably… However, these developments…also open up new avenues for abuses and new vulnerabilities which…could undermine progress." -Greenspan, Sept. 24, 1991	"One must truly marvel at the advances in computer and communications technologies that have been made just in the past five years… However, such innovation has also sharply increased the complexity of both financial instruments and financial management." -Phillips, Feb. 24, 1994	"In conclusion, we can expect financial institutions to continue experimenting with new technologies and electronic, information-based services. I believe that this is an area with great potential, yet the uncertainties are large and the payoff horizon unknown." -Ferguson, Oct. 20, 2000
N/A	International markets and competition -Heller, May 9, 1988	No such speeches during this period	Bond Market -Meyer, Sept. 12, 1997
	Commercial and central banks -Greenspan, Oct. 10, 1989		Financial market turbulence -Rivlin, Mar. 1, 1999

In terms of U.S. stocks, which were rarely mentioned in the sampled speeches, a narrative of "Soaring Stocks" emerged in 1998, which sees stocks heading towards extremely high valuations, aided by a number of factors such as recent economic stability, technological advancements, and low inflation. Lastly, in the final sampled speech, a "Sustainable Stocks" narrative emerged in which U.S. stocks were heading towards more sustainable evaluations due to the gross imbalances in the economy A full description of all five of these narratives, along with their frequency counts, are made available in Tables 6.4 and 6.5 and Figures 6.8 and 6.9 on the next three pages.

6.2 Institutional features

The fourth stage of analysis revealed five interrelated means by which boom narratives became institutionalized and two reasons why efforts to deinstitutionalize these narratives failed. In terms of institutionalization, the five means or methods present in this pillar were: 1) the spread and repetition of boom narratives, 2) the transition of a boom narrative to destinator, 3) using unequivocal language, 4) rationalizing conflicting evidence, and 5) providing support with expert references. These five methods are explained in detail below.

6.2.1 The spread and repetition of boom narratives

As shown in the previous section, at the Federal Reserve from 1987 to 2000, several narratives emerged and then spread that fit the description of a boom narrative. Concerning the U.S. economy, both a "Structural Shift" narrative and a "New Economy" narrative constitute boom narratives that would lead investors to believe that investments in many sectors of the U.S. economy would deliver significant returns in the near, medium, and long term, particularly in tech-related sectors. At the asset level, both a "Technological Dominance" narrative and a "Soaring Stocks" narrative would invoke similar projections[22]. From 1987 to 1995, not a single speech expounded one of these boom narratives. Then, from 1996 to late 2000, these four narratives became commonplace at the Fed, with 26 of the 42 (62 percent) sampled speeches including one or more such narratives, producing a total of 37 boom narratives in those years. With the Federal Reserve representing one of the most respected sources of U.S. economic analysis, such narratives immediately acquired social legitimacy.

[22] As the assessment as to whether any individual narrative constitutes a boom narrative or not is a subjective process, I maintained my conservative approach in this process for each pillar. Thus, narratives of "growth," "expansion," and "stability," were not categorized as boom narratives, despite their positive connotations.

Table 6.4 Tech company narratives (sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Technological Dominance	• Market dominance • "Outsized rewards" • High market valuations • Diversification	• Profound shift in economy • Laissez-faire capitalism • Global competition	• Constant innovation • Technological synergies • Lofty equity values (low cost of capital) • Productivity growth	• Lack of skills/education • Upstarts/intense competition • "Wishful thinking"	"Once proud hi-tech firms are being upended by new technologies developed by upstarts. But even the latter are lately looking over their shoulders at other upstarts with still newer technologies. The outsized rewards to high skills induce others to emulate them, and hence staying at the top has become ever more precarious." -Greenspan, Feb. 5, 1996
Technological Uncertainty	• Uncertain returns • Increased presence	• High rate of adoption of new technologies • Difficulties turning a profit	• Remarkable technological innovations	• Difficulty in reducing costs and increasing revenue	"Many internet banks have discovered that they are using any savings in "brick and mortar" operating costs to pay "bounties," or fees, to other Internet sites that refer new customers and to operate call centers to field the customer inquiries that invariably arise…bank management needs to enter these investments recognizing that the full benefits may not be gained quickly; may, if gained, be competed away; and may, indeed, not be captured at all." -Ferguson, Oct. 20, 2000
Technological Shakeup	• Shakeup • Rebalancing	• Over-exuberance	• Continued innovation and optimism	• "Untoward events"	"Demand for high-tech equipment and fiber optics expanded rapidly, but in some segments of the market available supply appears to have increased even faster." -Greenspan, Dec. 5, 2000

Table 6.5 U.S. stock narratives (sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Soaring Stocks	• Extremely high valuations	• Laissez-faire capitalism • Wealth creation	• Economic stability • Confidence • Technology • Productivity gains • Low inflation • Low labor costs (high profit margins) • Margin debt	• Bubbles • Instability • Lack of savings • Limits to income growth	"The American economic stability of the past five years has helped engender increasing confidence of future stability. This, in turn, has dramatically upgraded the stock market's valuation of our economy's existing productive infrastructure…Coupled with the quickened pace of productivity growth, wage and benefit moderation has kept growth in unit labor costs subdued in the current expansion. This has both damped inflation and allowed profit margins to reach high levels. That, in turn, apparently was the driving force beginning in early 1995 in security analysts' significant upward revision of their company-by-company long-term earnings projections." -Greenspan, Sept. 4, 1998
Sustainable Stocks	• More sustainable levels of growth	• Imbalances (of supply and demand)	• Well functioning capital markets	• High inflation • “Untoward events”	"Why then, one might ask, is this process of reassessment taking place now? In large part, it appears to be the expected byproduct of the economy's transition to a more sustainable balance in the growth of demand and supply." -Greenspan, Dec. 5, 2000

Figure 6.8 Tech company/U.S. stock narrative (by count), sampled speeches by U.S. Federal Reserve officials, 1987–2000

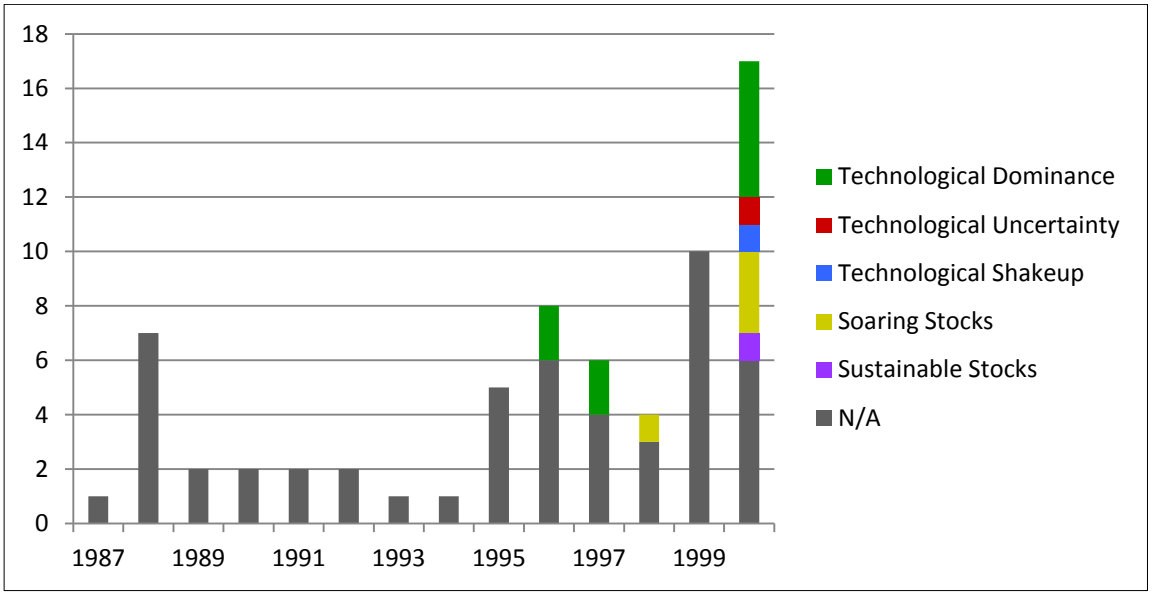
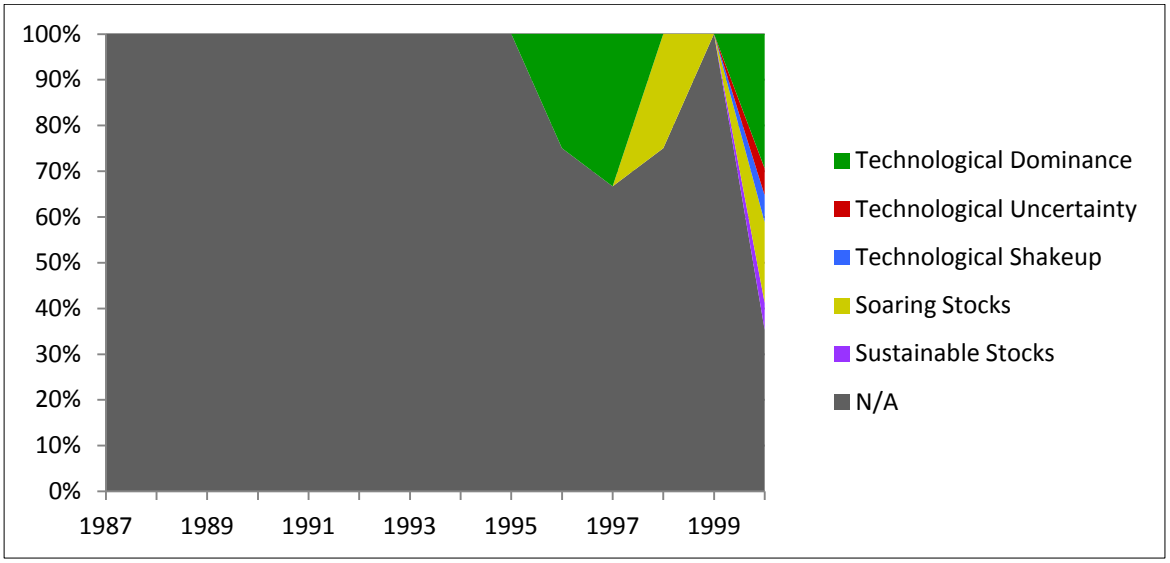


Figure 6.9 Tech company/U.S. stock narrative (by percentage), sampled speeches by U.S. Federal Reserve officials, 1987–2000



Note: Each of the 65 Federal Reserve speeches was analyzed for the presence of one, and only one, tech company narrative and one, and only one, U.S. stock narrative. Thus, an individual speech could include no narratives (N/A), one narrative (either a tech narrative or a stock narrative), or two narratives (both a tech narrative and a stock narrative). Three speeches in the year 2000, speech #52, #58, and #65, possessed both a tech narrative and a stock narrative. Hence, for that year, the total number of counts (17) is three greater than the total number of sampled speeches (14).

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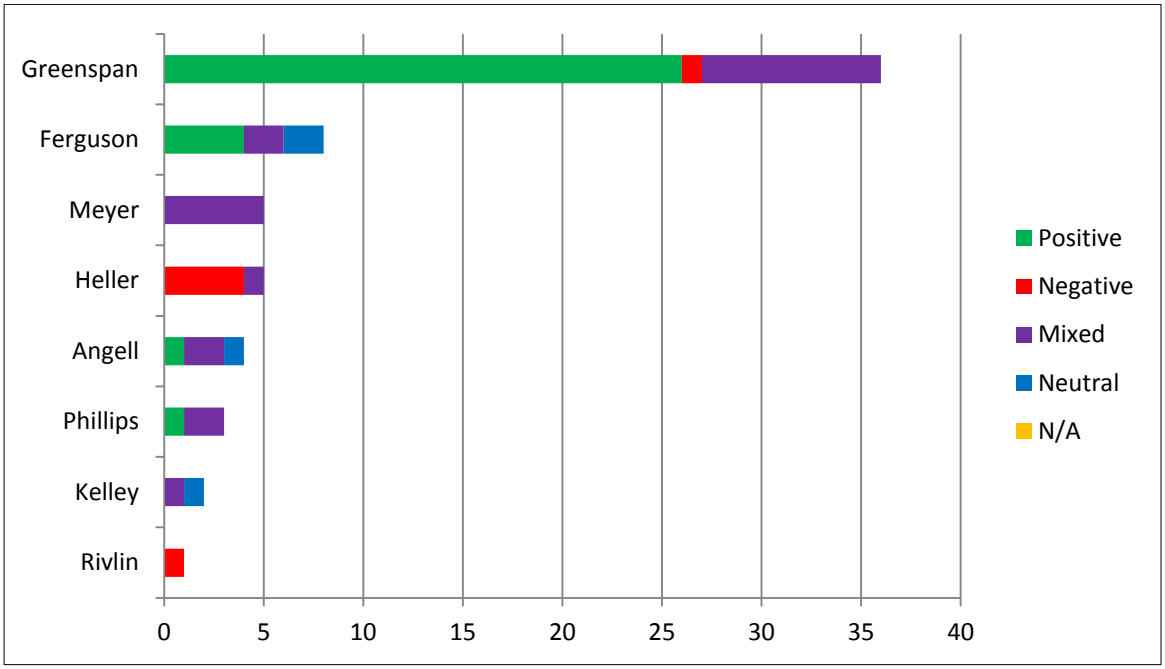
Further analysis of the spread and repetition of boom narratives at the Federal Reserve revealed another trend worth noting, which was the role of Chairman Alan Greenspan. As seen in Figure 6.10 below, Greenspan, who delivered 37 of the 65 sampled speeches, was by far the most optimistic of the U.S. economy. As seen below, of the 32 positive U.S. economy speeches, 26 belonged to Greenspan. Moreover, all four boom narratives in this sample were first expounded by Greenspan, often repeated by him several times, and then later found in the speeches of other officials. For instance, the "Structural Shift" narrative was first expounded in a 1996 (June 6) speech by Greenspan and was then later expounded by both Roger Ferguson in 1999 (Sept. 21) and Laurence Meyer in 2000 (June 1). Similarly, the "New Economy" narrative was first expounded in 1998 (Sept. 9) by Greenspan and then later again by both Ferguson (three times: Feb. 17, 2000; May 9, 2000; and Oct. 20, 2000) and Meyer (June 6, 2000). Greenspan's position of Chairman would only serve to increase the social legitimacy of such narratives, likely also at least partially explaining their spread amongst Reserve officials.

Figure 6.10 Connotation of U.S. economy/companies by speaker (by count), sampled speeches by U.S. Federal Reserve officials, 1987–2000



6.2.2 Boom narrative destinator

In the sample, an interesting trend emerged amongst the transition from one popular narrative to the next, that being the transition of a theme from the object of one narrative to the destinator (the taken-for-granted context) of a later narrative. This trend is best first explained in the U.S. economy narratives that emerged, as presented in Table 6.2. For example, in the first narrative to emerge, "Economic Competitiveness," international competitiveness was viewed as the object of U.S. companies, an object they had yet to acquire.

Later on, in both an "Economic Growth" narrative and a "Structural Shift" narrative, international competitiveness was viewed as an acquired object. With this task accomplished, international competition was now viewed as merely the context in which the U.S. economy was operating and became a frame of reference by which to evaluate new developments—with developments that increased international competition being viewed favorably and developments that impeded international competition being viewed unfavorably.

The theme of technology underwent a similar, but even more dramatic, transition. Near the very beginning of the sampled period, technology, including references to computers and telecommunications, was already discussed in a rather positive manner, such as in the following Greenspan (Oct. 11, 1988) quote: "Advances in computer and telecommunications technology have enabled both borrowers and lenders to more easily, and at lower cost, obtain and use credit- and market-risk information." However, earlier speeches also included comments on the drawbacks and possible dangers of such technological advancements, such as in a speech by H. Robert Heller (Oct. 25, 1988): "…the increased internationalization of the financial markets causes events in one country to reverberate beyond national borders...the global integration is made possible by technological advances in communications and computers."

By the mid 1990s, while the problems and mixed nature of these advancements were still acknowledged, technology was now viewed as the solution to its own problems: "…if it is technology that has imparted the current stress to markets, technology can be employed to contain it" (Greenspan, April 11, 1995).

The transition of technology continued into the late 1990s, when technological advancements were viewed in an almost exclusively positive manner, as shown in Figures 6.6 and 6.7. During this time, technological advancements became the key enabler in the "Structural Shift" narrative. Then, in 1998, 1999, and 2000, when the "New Economy" and "Technological Dominance" narratives emerged, a profound, technological shift in the U.S. economy became the destinator or context by

which new objects (new economic rules and market dominance) could be acquired. That is to say, in this sense, the "Structural Shift" boom narrative was heavily institutionalized when it became the taken-for-granted context in which the "New Economy" and "Technological Dominance" narratives emerged.

Greenspan's speech on March 6, 2000 fully illustrates the institutionalized nature of a technological, structural shift and its support of "New Economy" and "Technological Dominance" narratives (this speech's transcript and an explanation of its analysis is provided in full in Appendix 4). In this speech, Greenspan highlights record productivity growth, subdued inflation, and "dramatic changes in the way goods and services are produced" as evidence of a new and exciting U.S. economy. He also observes that a "flood of startup firms" claim to offer the chance to "revolutionize and dominate large shares of the nation's production and distribution system." In explaining the origin of this "new economy," Greenspan left little doubt, as he stressed, "my remarks today will focus on what is evidently the source of this spectacular performance—the revolution in information technology."

He goes on to note that "discontinuous shifts in economic structure" result in difficulties appraising new companies and that a recent, "special wave of innovative synergies" brought us to this "fascinating" and even "unsettling" point in history. Hence, Greenspan's view is that a "new economy" and the market dominance of U.S. tech companies is only possible because of the rapid and cumulative changes that the technological revolution has brought about, changes that have resulted in a discontinuous, structural shift in the economy.

6.2.3 Unequivocal language

Highly interrelated to the discussion above was the use of unequivocal language. Unequivocal language refers to the use of matter-of-fact language that suggests that what is stated is clearly the case, leaving little to no room for debate. Such language exudes confidence and is likely to confer great certainty to readers and listeners, particularly to those that are not nearly as informed as the writer or speaker. In these sampled speeches, Federal Reserve officials often used such language, including during the articulation of a boom narrative and especially, again, by Alan Greenspan.

For instance, in the year 2000 alone, Greenspan gave several speeches expounding a "New Economy" narrative, with each speech including various styles of unequivocal language. On January 13, he commented on the U.S. economy, stating (all emphases are added), "However one views the causes of our low inflation and strong growth, *there can be little argument* that the

American economy as it stands at the beginning of a new century has *never exhibited so remarkable a prosperity* for at least the majority of Americans."

Two months later, on March 6, he analyzed the implications for the business cycle: "In the last few years it has become *increasingly clear* that this business cycle *differs in a very profound way* from the many other cycles that have characterized post-World War II America." Then, on April 5, he forecasted future productivity trends: "*I see no reason* that productivity growth cannot remain elevated, or even increase further, to the *undeniable benefit* of American businesses and workers."

Lastly, on November 20, two weeks before giving his speech on the shakeup in tech firms and stocks, he gave further predictions on the future of markets: "*Clearly*, we have witnessed a rapid evolution of financial markets in recent years, and *the likelihood of continuing fundamental change is high*."

Especially when repeated several times in quick succession, the certainty and confidence in such language adds to the taken-for-granted aspect of these boom narratives. Additional examples of unequivocal language for this and other narratives are presented on the next page in Table 6.6.

6.2.4 Rationalizing conflicting evidence

While the period from 1987 to 2000 witnessed a number of favorable economic trends, not all trends were positive. When addressing unfavorable events or data during the exposition of a boom narrative, Reserve officials, once again primarily Greenspan, would often rationalize, or perhaps even "spin," such evidence to help listeners and readers understand why the evidence is not really negative at all and may in fact be further support of a boom narrative.

This method was used in response to three situations during the sampled period: 1) the lack of (or minimal) productivity and output growth during the tech boom, 2) the Asian Financial Crisis, and 3) the absence of a comparable tech boom in parts of Europe or Japan. Below I discuss the rationalization of each of these situations.

In the year 1996, both a "Technological Dominance" and a "Structural Shift" narrative emerged. However, at that time, U.S. GDP and productivity statistics had yet to exhibit any evidence of a marked, upward swing in output or efficiency. Greenspan (Feb. 5, 1996) responded to this lack of evidence in the following quote:

Table 6.6 Examples of unequivocal language

(sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Narrative	Selected quotation
Economic Growth	"…financial markets *undoubtedly are far more efficient today than ever before*." -Greenspan, Mar. 3, 1995
Structural Shift	"The increasing importance of new insights has, *of course*, raised the value of information creation and transfer in boosting standards of living. Thus, it should be *no surprise* that new computer and telecommunications products have been accorded particularly high value by consumers and business and, hence, why companies that successfully innovate in this field exhibit particularly high stock market values." -Greenspan, Sept. 12, 1997
New Economy	"The fact that the capital spending boom is still going strong indicates that businesses continue to find a wide array of potential high-rate-of-return, productivity-enhancing investments. *And I see nothing to suggest* that these opportunities will peter out any time soon." -Greenspan, Mar. 6, 2000
Technological Dominance	"Many of these combinations arise directly from the opportunities created by new technology...information technology has *almost certainly* pushed out the point at which scale diseconomies begin to take hold for some industries." -Greenspan, Mar. 6, 2000
Soaring Stocks	"More recently, however, it has become *increasingly difficult to deny* that something *profoundly different* from the typical postwar business cycle has emerged." -Greenspan, Jan. 13, 2000

Note: All emphases (italics) are added

> …it has puzzled many of us that the growth of output as customarily measured has not evidenced a corresponding pickup. Of course, output may not be measured correctly. Indeed, the financial markets are suggesting that we increasingly expense items which should be capitalized and hence underestimate the growth of our GDP and productivity.

Thus, in Greenspan's opinion (making use of the unequivocal language "of course"), financial markets, meaning stock investors, have it right: many current expenditures, referring to those in computing and other related areas, should be treated as assets. If they were, output figures would be aligned with the salient improvements in the U.S. economy.

Later on in the year, and in 1997, Greenspan continued to rationalize the lack of productivity growth, such as in a 1996 (Oct. 16) speech: "...like the major technological advances of earlier periods, it will take time for our newest innovations to work their way into the nation's infrastructure in a productive manner…" and similarly in a 1997 (Oct. 5) speech: "…despite the

benefits we have seen this decade, it may be that the truly significant increases in living standards resulting from the introduction of computers and communications equipment still lie ahead."

In 2000 (Feb. 17), even Roger Ferguson acknowledged, albeit somewhat cautiously, that improper accounting may be at fault: "Others argue that, in this world of knowledge-intensive industries, accounting treatments do not accurately measure true economic earnings..."

As introduced in Chapter 2, in 1997 and 1998 Southeast Asia experienced a rather sharp economic correction, particularly in their exchange rates. Rather quickly, contagion from this crisis spread to South America, Russia, and even the U.S. banking system. At the time, numerous pundits started to question whether free, global markets and laissez-faire capitalism were as beneficial and stable as commonly claimed. In his speeches, Greenspan responded to such questions by arguing that it was not actually free markets but rather lingering socialist institutions that were responsible for the crisis.

This rationalization was expressed in both a 1998 (April 2) speech: "[The Asian economies in crisis] relied on markets in most respects, but they also used elements of central planning in the form of credit allocation, and those elements, in my view, turned out to be their Achilles heel…" and a 1999 (Oct. 19) speech: "Such institutions [publicly owned banks] rarely exhibit the dynamism and innovation that many private banks have employed for their, and their economies' prosperity." Interestingly, this last quote was from a speech given at a conference with the theme "Do efficient financial markets contribute to financial crisis?" Greenspan's speech was appropriately entitled, "Do efficient financial markets mitigate financial crises?"

Lastly, in the midst of the tech boom mania, the question arose as to why the seemingly obvious structural shift and emerging new economy were so pronounced in the U.S. and not as noticeable in many European countries or even the veritable behemoth of technological innovation and trade, Japan. Greenspan (July 11, 2000) concluded that it was the inflexible labor laws of those countries that prevented them from achieving such gains: "…U.S. businesses and workers appear to have benefited more from the recent advances in information technology than their counterparts in Europe or Japan…The relatively inflexible and, hence, more costly labor markets of these economies appear to be a significant part of the explanation."

In this situation, as with the previous two mentioned above, with conflicting evidence accounted for, all that remained was (often unequivocally) positive and reinforcing evidence of the prevailing boom narratives.

6.2.5 Expert references

Closely related to the method of rationalizing conflicting evidence, numerous boom narratives in the sampled speeches referenced expert sources—sources that offered further support and conferred an objective sense of legitimacy upon the narratives. In speeches by Federal Reserve officials, these sources usually included economists at prestigious universities and the Fed itself and studies produced by the Bureau of Labor Statistics (BLS).

Expert references were frequently used in the practice of rationalizing conflicting evidence, as demonstrated by Greenspan in 1996 (Feb. 5): "A number of commentators, particularly Professor David of Stanford University, have suggested that much of the wheel spinning...reflects the extended time it typically has taken to translate a major new technology into increased productivity and higher standards of living…" and in 1999 (Oct. 19): "A recent study by Ross Levine and Sara Zervos [two economists] suggests that financial market development improves economic performance, over and above the benefits offered by banking sector development alone…It is no coincidence that the lack of adequate accounting practices, bankruptcy provisions, and corporate governance have been mentioned as elements in several of the recent crises that so disrupted some emerging-market countries."

In both situations, expert references added substantial support to Greenspan's optimistic views. Table 6.7 on the next page offers further examples of how such references were used.

Moving on, this stage of analysis also revealed two reasons why efforts to deinstitutionalize boom narratives failed. These reasons were: 1) texts that truly attempted to challenge the discourse found in boom narratives were found to be in a very small minority, and 2) many of these texts were simply reacting to problems that had already occurred. These two reasons are explained in detail below.

6.2.6 Minority status

The figures in Section 6.1 reveal an overarching trend in discourse at the Federal Reserve from 1987 to 2000—that being from 1987 until 1995 much of the discourse was either negative or balanced in relation to the U.S. economy and technology, while from 1996 to 2000 the majority of discourse was overwhelmingly positive. In this latter period, which included 42 speeches, only one speech contained a negative connotation of the U.S. economy. This was Alice Rivlin's March 1, 1999 speech, in which she foresaw slowing economic growth and opined:

Table 6.7 Examples of expert references

(sampled speeches by U.S. Federal Reserve officials, 1987–2000)

Narrative	Selected quotation
Structural Shift	"Professor David suspects, with many good reasons, that the ability of computer-based technologies to become fully reflected in our overall national productivity is being delayed, as the infrastructure gradually, but progressively, adjusts to new modes of production. With the ongoing turnover of the capital stock, computer-related synergies will, presumably, substantially raise real value added per hour in the years ahead." -Greenspan, Oct. 16, 1996
New Economy	"Oliner and Sichel [two economists on the Federal Reserve Board staff] estimate that, if one consolidates all the influences of high-tech investments, they account for about two-thirds of the acceleration in productivity since 1995. This research supports the view that fundamental changes are under way in our economy." -Ferguson, May 9, 2000
Technological Dominance	"The growth of high-tech industry here in the Research Triangle, as well as in Silicon Valley and Boston—all areas rich in educational and research institutions—is no accident. In the private sector, a number of major corporations have invested in their own internal training centers—so-called corporate universities. Some labor unions have done the same. More broadly, recent surveys by the Bureau of Labor Statistics indicate that the provision of formal education on the job has risen markedly in recent years." -Greenspan, Sept. 12, 1997

> The greatest need at the moment is to find a forum for continuous and constructive communication and consensus-building among the major industrial and emerging market countries to hammer out new ways of strengthening world financial systems and both preventing and mitigating future financial crises and dealing with them more effectively when they occur…There is plenty to work on if even modest progress is to be made in finding ways for international financial markets to function more efficiently and with less costly swings and turbulence.

After her speech, a similar "Economic Stability" narrative was repeated only one time in the sample, by Laurence Meyer on June 14, 1999, in which he warned, "…the high correlation of risks across banks may induce a simultaneous exercise of put options, which could exacerbate or even trigger a systemic crisis." Of important note, while both of these speeches included warnings of systemic risks and market turbulence, neither speech directly questioned the boom narratives and optimism that was so prevalent in other sampled speeches at the time.

A few speeches did however raise the possibility that much of the current euphoria and astronomical market valuations were the result of irrational expectations and signs of a market bubble. The few times such a possibility was raised, though, the speakers concluded that it was impossible to tell whether the mania was a bubble and then went on in the same speech or future

speeches to continue touting the remarkable performance of the U.S. economy. For instance, in a January 13, 2000 speech, Greenspan observed:

> When we look back at the 1990s, from the perspective of say 2010…we may conceivably conclude…the American economy was experiencing a once-in-a-century acceleration of innovation, which propelled forward productivity, output, corporate profits, and stock prices at a pace not seen in generations, if ever. Alternatively, that 2010 retrospective might well conclude that a good deal of what we are currently experiencing was just one of the many euphoric speculative bubbles that have dotted human history.

Less than two months later, on March 6, the possibility of a bubble went unmentioned, with Greenspan opening, "My remarks today will focus both on what is evidently the source of this spectacular performance—the revolution in information technology…" Then, on April 5, the possibility of a bubble returned, but again Greenspan implied that it was impossible for anyone to tell:

> As a result, security analysts' projected five-year growth of earnings for technology companies now stands nearly double that for the remaining S&P 500 firms. To the extent that there is an element of prescience in these expectations, it would reinforce the notion that technology synergies are still expanding and that expectations of productivity growth are still rising. There are many who argue, of course, that it is not prescience but wishful thinking. History will judge.

In a May 9, 2000 speech, in which he noted, "Even the most optimistic of forecasters could not have anticipated such a favorable confluence of economic events," Roger Ferguson expressed similar views on the ability to identify a bubble:

> How does the performance of the stock market in recent years fit into this picture? A higher rate of technical change that raises the productivity and hence the profitability of capital should elevate the valuation of equities. But how much should stock values rise under those circumstances? Are stocks today overvalued, correctly valued, or undervalued? I certainly do not know, and I am not aware of anyone who does.

Such discourse by both Ferguson and Greenspan hardly qualify as true attempts to quash the prevailing boom narratives, leaving more pessimistic speeches such as Rivlin's and Meyer's in a very small minority.

6.2.7 Reactionary discourse

In mid to late 2000, the overarching discourse shifted from one of unbounded optimism to one of cautious pessimism. At this point, such discourse was largely reactionary, as the NASDAQ had

already suffered a one-day drop of nearly 10 percent in April amidst a trend of increasingly disappointing tech company income and profit results.

Hence, these speeches questioning the prevailing boom narratives were simply a case of "too little, too late." Interestingly, despite this shift to cautious pessimism, speakers still maintained a balanced and even at times optimistic view of the U.S. economy's overall condition and long-term prospects.

Reactionary discourse was first seen in Meyer's June 6, 2000 speech:

> I was startled by the bold title of an article that appeared in *The Wall Street Journal* on December 31, 1999: "So Long, Supply and Demand." But it illustrates the unbounded optimism—some might even call it irrational exuberance—about economic prospects...Several considerations provide some optimism that the outcome will be a benign one—a soft as opposed to a hard landing.

On October 20, 2000, Ferguson's "Technological Uncertainty" narrative possessed a similarly pessimistic tone:

> In conclusion, we can expect financial institutions to continue experimenting with new technologies and electronic, information-based services. I believe that this is an area with great potential, yet the uncertainties are large and the payoff horizon unknown.

Lastly, on December 5 of 2000, Greenspan's "Economic Transition," "Technological Shakeup," and "Sustainable Stocks" narratives reacted to the influx of unfavorable news, albeit with a healthy dose of optimism:

> Recently, wariness about risk again has increased as default rates on less than investment-grade bonds have moved higher, debt downgrades have become more commonplace, and many high-flying dot-com ventures have collapsed…To be sure, our current circumstances are in no way comparable to those of 1998. Financial markets have continued to function reasonably well, and credit continues to flow…

6.3 Summary

In summation, from 1987 to 2000, officials at the U.S. Federal Reserve—one of the most closely followed sources of U.S. economic reporting and forecasting and an institution with extremely high levels of discursive power and direct control over the nation's economy—gave increased attention to the topics of technology, innovation, and the new economy, and really only during the boom years of 1995 to 2000. During these boom years, they presented the U.S. economy in an increasingly, and nearly exclusively, positive manner, expounding narratives of strong growth, a profound structural shift, and a new economy. At the same time, technology and innovation was

now viewed as the motor behind the nation's strong growth, with narratives of technological dominance and soaring stocks taking hold.

Moreover, during these boom years, these extremely optimistic narratives took on a life of their own and started to appear as unquestionable and matter-of-fact aspects of a new economic reality. The matter-of-fact nature of these narratives became evident in a number of ways, including their spread and repetition by Reserve officials, the use of one boom narrative (structural shift) to support another boom narrative (new economy), the use of unequivocal language, the rationalization of conflicting evidence, and support from expert references. During these years, though, there were efforts to challenge the status-quo. However, these efforts were in a very small minority and were frequently only in reaction to initial market drops.

CHAPTER 7: THE TECH BUBBLE'S NORMATIVE PILLAR

This chapter presents findings from the normative pillar of institutionalization, referring to the values and norms that result from social expectations and moral obligations. Normative sources establish what is appropriate—how people should act, think, talk, and so on. For this study, the normative pillar is represented by media texts from *The New York Times* and *Fortune* magazine. From 1987 to 2000, there were 873,412 articles published by *The New York Times* and 20,420 articles published by *Fortune*. Figures 7.1 to 7.6 on the following two pages present the findings from the initial sampling stage.

A few interesting comparisons can be made here. First, articles containing the words "stock(s)" and "market(s)" remained fairly steady for both publications over the sample period, with a slight surge in results in the early 1990s. In stark contrast, references to technology and the new economy varied dramatically over time. Articles from *The New York Times* saw an almost nine-fold increase in title references to technology and a large spike in new economy references in the year 2000, while *Fortune* articles saw a large uptick in technology references as early as 1991 and a surge in references to new economy as early as 1993/1994.

References to "equity (-ies)" and "innovation(s)" remained rather constant for both publications, other than a surge in references to equity in *The New York Times* in the year 2000 and an unusual spike in references to innovation in *Fortune* in the year 1991 (which were all from a section entitled "Innovation: Products to Watch").

This initial sampling phase resulted in 20,279 *New York Times* articles and 1,046 *Fortune* articles. This sample was further reduced by selecting the first article (by date of publication) of each year for each keyword for each publication. Selecting the first keyword entry by date of publication resulted in a large number of articles from the month of January. However, an initial viewing of the articles revealed no reason to believe this selection process would bias the findings in any way. Quite the contrary, such a selection process resulted in a rather even chronological distribution of sampled articles and allowed for comparison of a number of yearly review and forecast articles.

A few of the initially sampled *Fortune* articles could not be found, neither through a database search nor at the forbes.com archive site. These articles were all written anonymously and were replaced by the next search result. For seven such searches, there were only anonymous results, so those articles were not replaced.

Figure 7.1 Keywords in article titles (by count),
The New York Times, 1987–2000

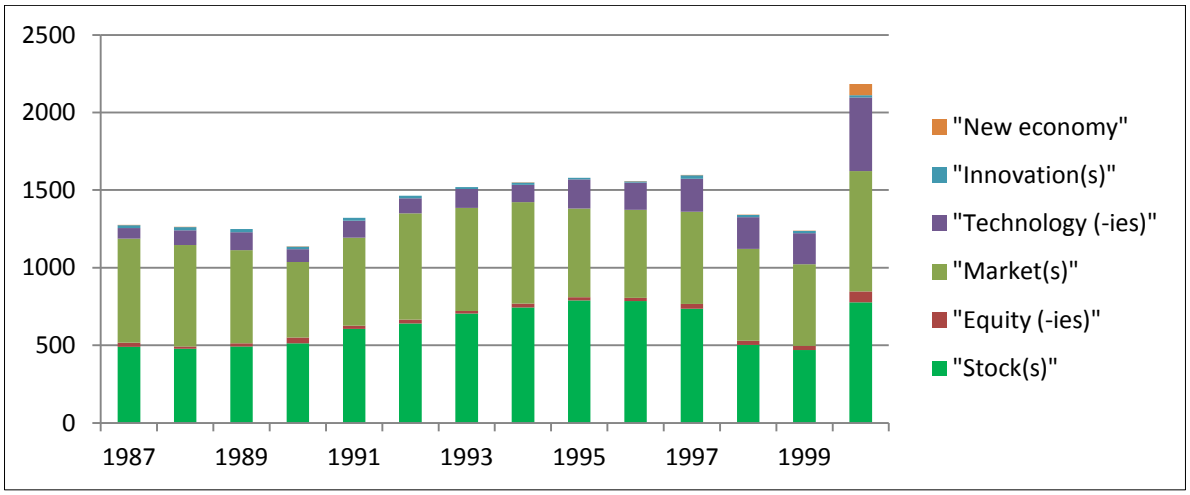


Figure 7.2 Keywords in article titles (by count),
The New York Times, 1987–2000

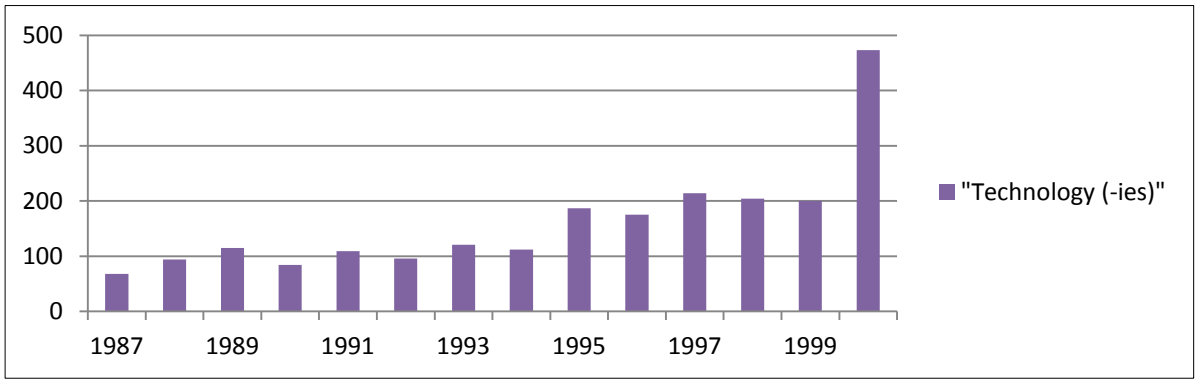
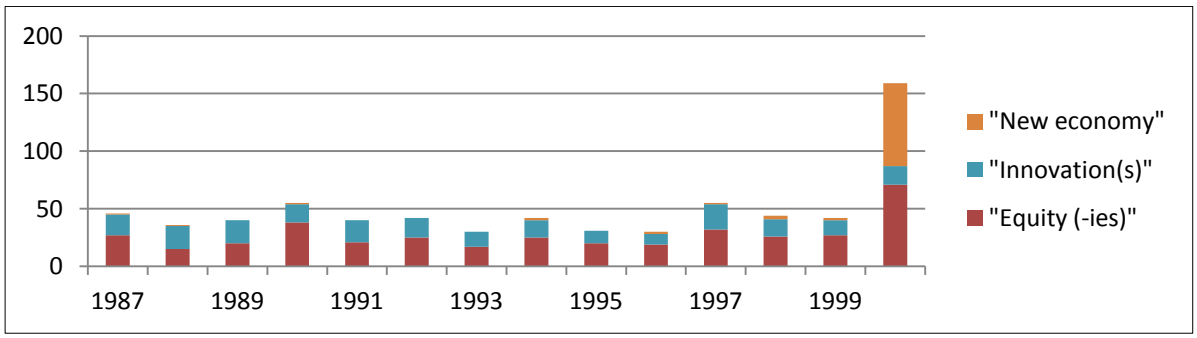


Figure 7.3 Keywords in article titles (by count),
The New York Times, 1987–2000



Source for three figures: ProQuest database

Note: These keywords were searched in all 873,412 articles in *The New York Times* from 1987 to 2000. While each title could include two or more keywords (for example, "equity markets" contains both "equity" and "market"), no keyword was counted twice in the same title.

Figure 7.4 Keywords in article titles (by count), *Fortune*, 1987–2000

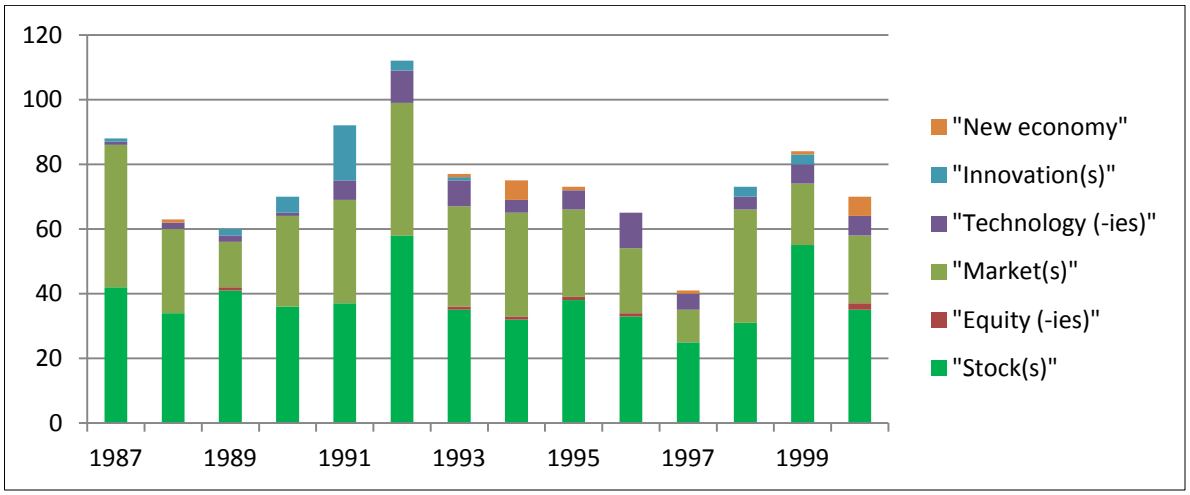


Figure 7.5 Keywords in article titles (by count), *Fortune*, 1987–2000

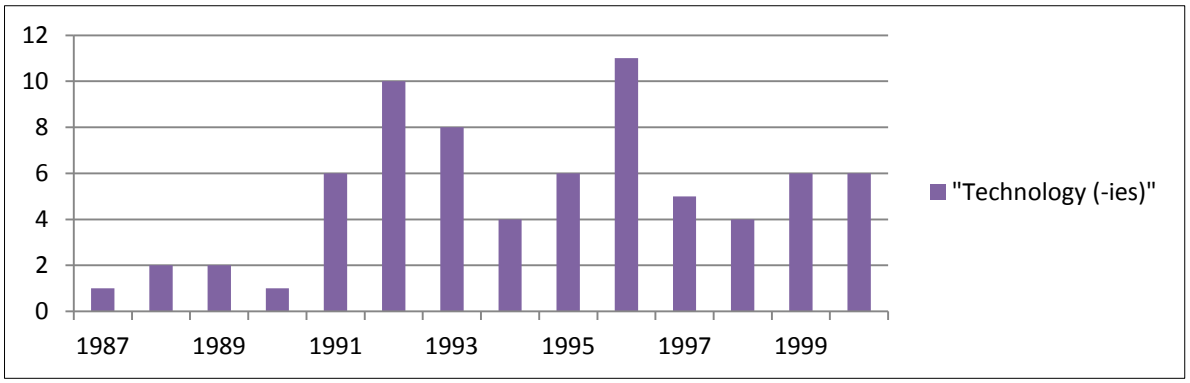
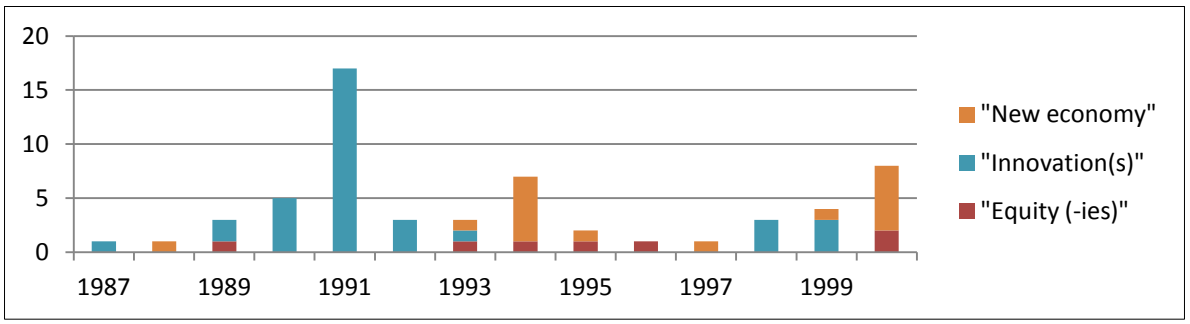


Figure 7.6 Keywords in article titles (by count), *Fortune*, 1987–2000



Source for three figures: ProQuest database

Note: These keywords were searched in all 20,420 articles in *Fortune* from 1987 to 2000. While each title could include two or more keywords (for example, "equity markets" contains both "equity" and "market"), no keyword was counted twice in the same title.

Also, a few searches produced duplicates, as, for example, an article with the words "stock market" in its title would have been sampled twice. In these cases, the duplicate was replaced by the next search result. Appendix 2 only provides the final sampled articles.

Thus, with 14 years, six keywords, and two publications, such a sample would result in 168 articles. However, there were 26 instances where a keyword returned no results for a given year for a given publication and seven instances where an article could not be retrieved or replaced, so the final sample consisted of 135 articles.

Appendix 2 provides the reference information for each of these articles, along with their citation codes that will be used throughout this chapter.

7.1 Narrative analysis

Figures 7.7 and 7.8 on the next page and Table 7.1 on the following page present results from the first step of analysis in this section, the categorization of each article's connotation of the U.S. economy and/or U.S. companies.

These connotations are best described in two general phases. First, the period from 1987 to 1992 witnessed a great variety of connotations with the largest number (20 of the 52 articles) being mixed, but articles with a negative connotation of the U.S. economy or the performance of U.S. companies did outnumber those with a positive connotation by a count of 10 to five.

As a result, the overall mood of sampled articles from this period was one of anxiety and disappointment in reference to U.S. companies, alongside jealousy of foreign companies and economies (most frequently referring to Japan and West Germany).

Second, a shift occurred around 1993 that resulted in the majority of articles (47 of 83) from 1993 to 2000 having a positive connotation of the U.S. economy or the performance of U.S. companies, with very few articles (only 4 of 83) from this period possessing a negative connotation.

Table 7.1 is organized according to these two phases and provides a few selected quotations from each phase.

Figure 7.7 Connotation of U.S. economy/companies (by count), sampled media articles, 1987–2000

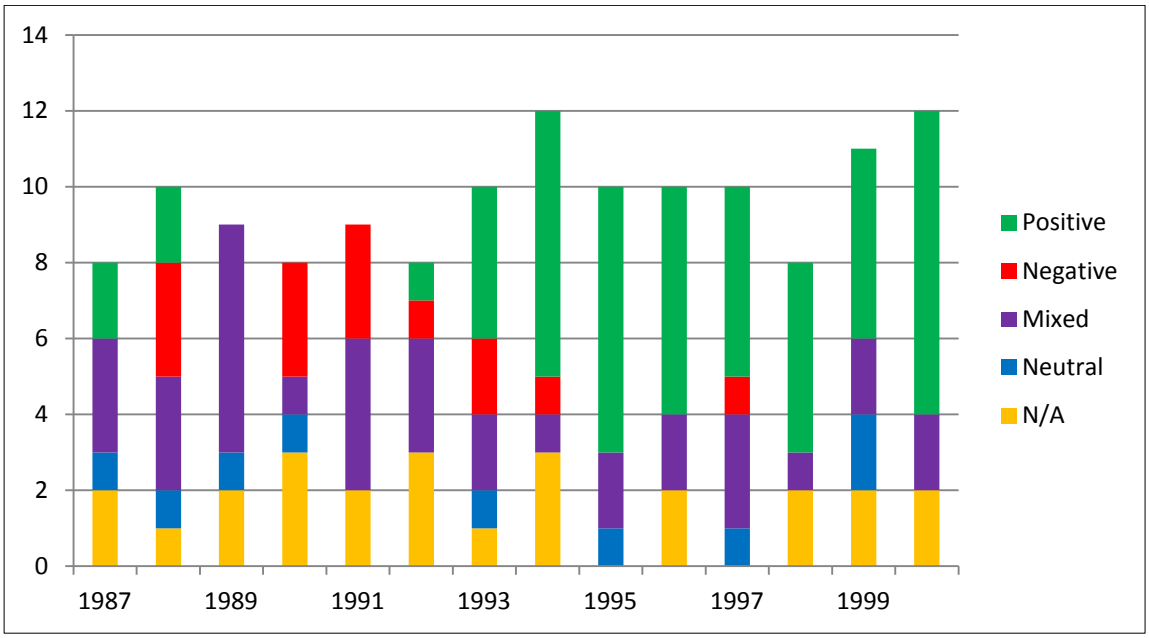
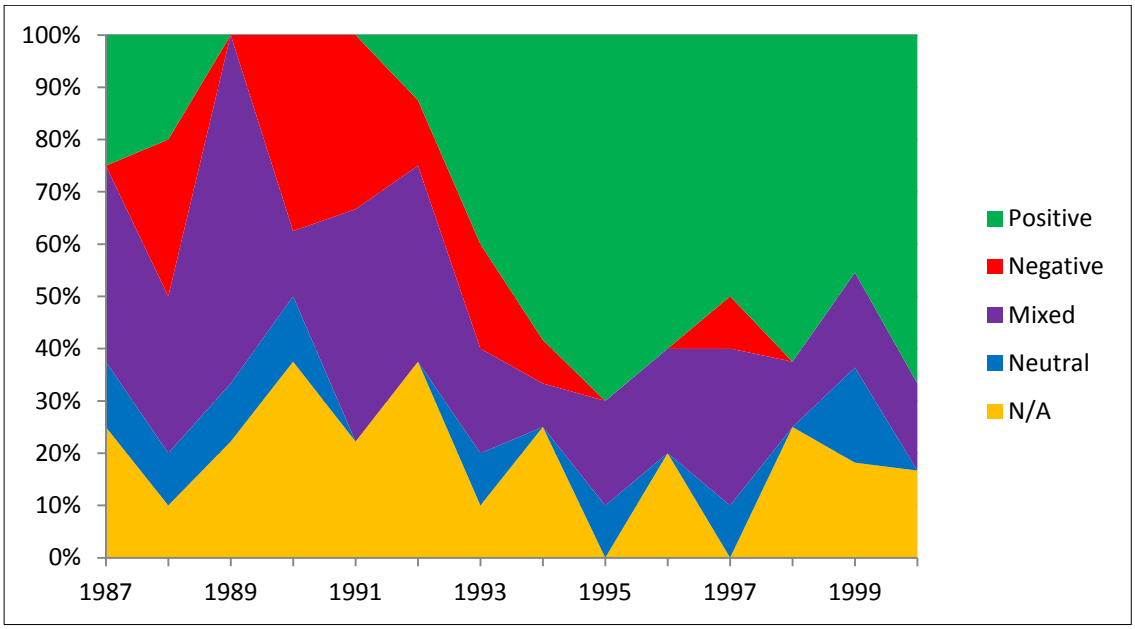


Figure 7.8 Connotation of U.S. economy/companies (by percentage), sampled media articles, 1987–2000



Note: Each of the 135 media articles sampled was categorized according to one, and only one, of the five connotations.

Table 7.1 Selected quotations and topics for each U.S. economy connotation (sampled media articles, 1987–2000)

Connotation	Quotations and topics (1987–1992)	Quotations and topics (1993–2000)
Positive	" 'Over all [sic], 1987 should be a good year—by and large as good a year as 1986,' Deputy Secretary Clarence Brown said when he released the 690-page United States Industrial Outlook on Wednesday." -The NY Times, 1987	"Despite a relentless chorus of bearish prognosticators, the feisty American Stock Exchange surged 16.6% for the year, the over-the-counter market rose 12.1%, and even the lumbering Big Board was up a respectable 7.6%." -Teitelbaum, 1994
	"Stocks jumped in Japan today following the record highs reached last week on Wall Street." -Reuters, 1992	"We have had an economy that has been very robust…Consumer confidence is at record levels, people feel good about the economy." -Truell, 1998
Negative	" 'Excess volatility is a serious threat to our nation's capital markets and the American economy,' said John J. Phelan Jr., the exchange's [NYSE] chairman…the Japanese stock market is now watched as a leader, often admired and envied in New York and London." -Sterngold, 1990	"In this country [the U.S.] real estate looks dubious, and everyone knows how illiquid it can be…Bonds may be attractive, but there is real risk in buying long-term issues, and little reward from buying short-term ones. The banks don't want money, which is why they pay so little for it." -Norris, 1993
	"For owners of junk bonds, 1989 wasn't just a bad year, it was a nightmare on Elm Street." -Serwer, 1990	"The recent dive in technology stocks is making more than a few investors nervous about the potential for a more serious market break." -Kover, 1997
Mixed	"Since the October 1987 market crash, the broad market indexes have more than recouped their losses, but small stocks have lacked the momentum to rebound." -Hylton, 1991	"Measured by the performance of the major stock markets, the year was a thorough downer: The Big Board slipped 5.8%, Nasdaq dropped 7.4%, and the American Stock Exchange fell no less than 11.8%...With signs abounding that the economy is still strong, the Fed could keep raising rates—bad news for stocks." -Michels, 1995
Neutral	Stock options -Stewart, 1990	China stealing technology -Schmitt, 1999

Not surprisingly, in step two, the media sample produced a large number (12 in total) of U.S. economy and/or company narratives, which are outlined in Table 7.2 on the next three pages. On the following page, Figures 7.9 and 7.10 present the frequency trends of these narratives over the sample period.

These narratives are best described in four groups: first, those that are primarily negative in their connotation (which are colored in various shades of red or blue in Figures 7.9 and 7.10); second, those that are essentially neutral in their connotation (colored purple); third, those that are moderately positive in their connotation (colored various shades of green); and fourth, those that are extremely positive in their connotation (colored various shades of orange and yellow).

Five of the narratives were primarily negative or at the very least possessed an attitude of skepticism towards the U.S. economy or U.S. companies. The narrative of "Economic Decline" was perhaps the most negative. This narrative sees U.S. companies that were once the envy of the world losing market share and technological prowess to several foreign competitors, particularly those in Japan and West Germany.

In this narrative, U.S. companies are essentially fighting for their survival, being helped by aggressive cost cutting, new product introduction, and even government rescues while being hindered by over-regulation, high interest rates and taxes, and soft demand. This narrative appeared nine times, mostly in the late 1980s and early 1990s.

Also quite negative, an "Economic Uncertainty" narrative emerged in the late 1980s, appearing three times. This narrative portrays the U.S. economy as extremely unpredictable and risky. In a climate of slowing growth, only risk-taking entrepreneurs, aided by low interest rates, can win despite being impeded by excessive regulations, high inflation, and widespread defaults.

Similar to that described in the cognitive pillar, a narrative of "Economic Competitiveness" emerged in this sample. This narrative, which appeared nine times, mostly in the late 1980s and early 1990s, focuses on the difficulties U.S. companies face competing with powerful foreign and domestic rivals. While some U.S. companies are successful due to factors such as innovation and product differentiation, others struggle amidst widespread price wars, high labor costs, and overcapacity.

Table 7.2 U.S. economy/company narratives (sampled media articles, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Decline	• Declining revenue • Survival • Slump • Inferiority to foreign companies	• Past success • Recent crises • Profit motives • Laissez-faire capitalism	• New contracts/products • Cost cutting • Price increases • Gov't help/rescue • Cheap funding • Training/innovation	• Over-regulation/taxes • High costs/low demand • Poor management • High interest rates • Market volatility • Excessive risk	" 'We're losing our creative edge. American industry is on the decline because U.S. managers are too concerned about protecting short-term earnings to innovate.' " -quote of James Clark, owner of Silicon Graphics, in Dumaine, 1991
Economic Uncertainty	• Uncertainty • Risk	• Entrepreneurial spirit • Slowing growth • Laissez-faire capitalism	• Risk-taking • Entrepreneurs • Funding/capital • Low interest rates	• Over-regulation • Inflation • Defaults	"In these uncertain times many investors are loath to give up the safety of Treasury bonds… Unnerved by some highly publicized defaults among big junk bond issuers, investors exited the market in droves, driving down prices." -Serwer, 1990
Economic Competitiveness	• International and domestic competitiveness • Price wars	• Profit motives • Global competition • Laissez-faire capitalism	• Innovation/technology • Meeting consumer demands • Differentiation • Foreign investment • Gov't help • Takeovers/acquisitions	• Int'l and domestic competition • Gov't red tape • Demanding consumers • High labor costs • Overcapacity • Aging equipment	"Like the rest of the domestic industry, National Steel had been hurt by foreign competition, industry overcapacity, aging equipment and a bulging work force." -Hickspittsburgh, 1989
Economic Transition	• Sustainable growth • Slowdown	• Unsustainable growth • Business cycles	• Strong corporate earnings • Growth in tech sector • Retail investors • Low interest rates	• Euphoria/bubbles • Lackluster consumer spending • Inflation • Global turmoil	"Through restructurings, heavy layoffs, and ample use of leverage, corporate profits have been growing two to four times faster than the underlying economy since 1991." -Hylton, 1996b

Table 7.2 U.S. economy/company narratives (sampled media articles, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Euphoria	• Euphoria • Irrational exuberance • Jumping on the bandwagon	• Alleged shift in economy • History of boom-bust cycles • Growing presence of technology	• Radical innovations • Enthusiastic investors	• Poor product quality • Copycat behavior • Fierce competition • Gov't censorship	"For any commercial enterprise getting ready to start a site on the World Wide Web: Resolve to scotch your plans immediately unless you can honestly answer the question, 'Why?'…(Please note that 'Everyone is doing it' is not one of the listed responses.)" -Caruso, 1996
Economic Cycles	• Cycles • Recession and recovery	• Recent recessions and growth • Laissez-faire capitalism	• Modest investment during growth • International sales • Rebounding sectors	• Lack of skilled labor • Weak credit market • Low gov't assistance • High oil prices • Debt overhang	"Shipowners recall that in the past big orders were placed in the middle of an upswing in cargo rates and the ships were delivered several years later, when the industry was in a recession." -Salpukas, 1990
Moderate Economic Growth	• Moderate growth • Tame business cycle	• Manufacturing in decline • Recent economic disruptions • Laissez-faire capitalism	• Tech manufacturers • Service sector (mutual funds, consulting, etc.) • Low inflation • Low interest rates • Demographic forces	• International competition • Deficits • Oil shocks • Protectionism • Entitlement programs	" 'The growth will be broader across all industries than in recent years although somewhat shallower for all,' Mr. Brown said…'A broader range of industries will participate in the overall moderate growth.' " -The NY Times, 1987
Sound Economy	• Trustworthy, reliable economy and regulation • Healthy private sector • Robust economy (shielded from contagion)	• Dangers of int'l investment • High risks in developing countries • Laissez-faire capitalism	• Strong institutions (such as SEC) • Rule of law • Low unemployment • Corporate profit growth • Foreign investment • Low interest rates	• Corruption/fraud • Manipulation (insider trading) • Inflation • Stock bubbles • Global turmoil	"The good news is that the U.S. economy remains fundamentally sound. Our ever resilient private sector is ready to bounce back; all it really needs are calm, sensible policies at the top." -Krugman, 1997

Table 7.2 U.S. economy/company narratives (sampled media articles, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Growth	• Growth • Profits • Market share	• Laissez-faire capitalism • Global competition • Profit motives • Recent success of U.S. economy	• Strong leadership • Int'l expansion • Market targeting • Quality products • Innovation/R&D • M&A • Bull market in stocks	• Int'l and domestic competition • Executive feuds • Risky lending • Trade barriers • Gov't interference • Cyclical sectors	"U.S. exports to Poland, Czechoslovakia, Hungary, Romania, and Bulgaria rose an estimated 25% in 1992 over 1991, to about $1.5 billion. A big battle currently being fought on billboards and TV ads pitches PepsiCo, the current champ of the cola market, against Coca-Cola." -Michaels, et al., 1993
Economic Revival	• Revival • Resurgence • Efficiency • Interdependence	• Recent recessions and poor economic performance • Laissez-faire capitalism	• Outsourcing • Cost cutting • Growth in tech sector	• Complexity of new technologies	"For IBM, outsourcing recalls a bygone era of fat profits, when instead of selling its computers and punch-card machines to customers, it leased them, complete with service." -Kirkpatrick, 1991
Economic Leadership	• Global leadership	• U.S.'s historical achievements • Laissez-faire capitalism • Global competition	• Technological leadership • Strong institutions • Strong economy • Venture capitalists • Risk-taking	• Global competition • High investment costs	"Last April, pipsqueak upstart Ipsilon Networks…introduced a technology called IP switching that's forcing the rest of the industry to follow suit…Cisco Systems, IBM, 3Com, and most recently Cascade Communications have all announced versions of IP switches." -Schonfeld, 1997
New Economy	• "New economy" • Unprecedented growth	• Technological shift • Displacement of traditional business • Human progress	• Technological advances • New skills/knowledge • Global competition • Entrepreneurs • Acquisitions	• Lack of skills/education • Resistance to change • Gov't interference • Complexities of new business models	"Possibility: The job, as we know it, will cease to exist…Possibility: Ours will be an economy of one-person organizations…Electronic networks will effectively make the world a single market." -Kiechel and Schonfeld, 1994

Figure 7.9 U.S. economy/company narratives (by count), sampled media articles, 1987–2000

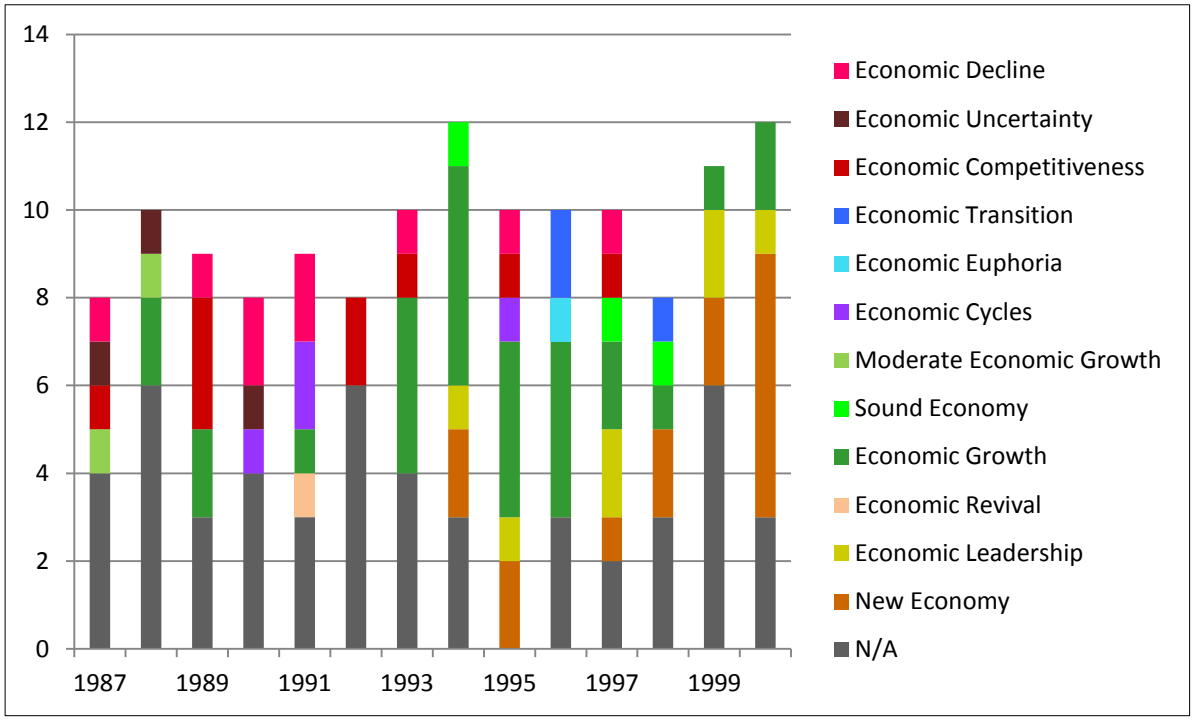
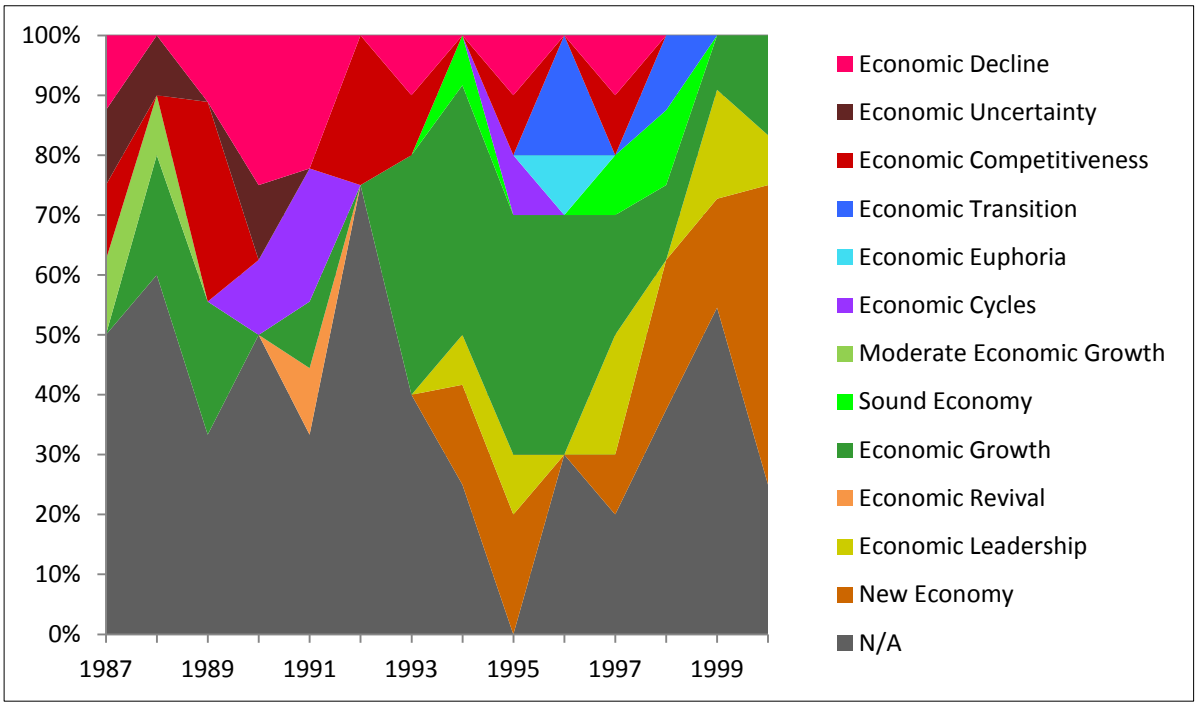


Figure 7.10 U.S. economy/company narratives (by percentage), sampled media articles, 1987–2000



Note: Each of the 135 media articles sampled was categorized according to one, and only one, of the 12 narratives, except for 50 articles that did not possess a full narrative and were coded as N/A.

The last two narratives in this group were largely skeptical in their forecasts of the U.S. economy. First, similar to that in the cognitive pillar, an "Economic Transition" narrative, appearing three times in the mid 1990s, sees current growth as unsustainable and predicts a slowdown as lackluster consumer spending, inflation, and global turmoil start to outweigh the recent benefits from growth in the technology sector and the sudden surge in corporate earnings.

Closely related to this narrative, an "Economic Euphoria" narrative, which appeared only once (in 1996), is skeptical of the alleged shift in the economy and cites the historical prevalence of boom-bust cycles as evidence that copycat behavior and intense competition will likely result in a future crash in the now euphoric stock prices.

The one neutral narrative, entitled "Economic Cycles," appeared four times. This narrative takes a more objective view and observes that economies periodically experience recessions due to the tendency of companies to overinvest during growth periods and then suffer from debt overhang during slowdowns. As a result, this narrative sees international sales as a key enabler and low government assistance during slowdowns as a key impeding force.

Three of the narratives to emerge can be grouped as moderately positive. First, a narrative of "Moderate Economic Growth" was present twice in the late 1980s. This narrative forecasts moderate growth and a tamer business cycle, with the U.S.'s decline in manufacturing being compensated by its growing service sector. Enablers such as low inflation and low interest rates will help to balance impeding forces such as large trade and fiscal deficits and potential oil shocks.

Similar in tone, a "Sound Economy" narrative expounds a rather balanced view of the U.S. economy and praises the U.S. for being one of the most reliable and trustworthy markets in the world. The U.S. benefits from its strong institutions and rule of law, while other, mostly developing, countries suffer from endemic corruption, fraud, and manipulation. This narrative was present three times in the mid 1990s.

Lastly in this group, and similar to that in the cognitive pillar, an "Economic Growth" narrative dominated the mid 1990s and was present 28 times in the sample. This narrative is more optimistic about the U.S. economy and focuses on the recent gains made by U.S. companies, largely due to factors such as great executive leadership, international expansion, innovation, and a bull market in stocks. However, this narrative also notes that factors such as formidable international competitors, executive feuds, and cyclical sectors are preventing U.S. companies from obtaining higher profits and greater market share.

In contrast, the final three narratives were extremely positive in their view of the U.S. economy and U.S. companies. The first of these, "Economic Revival," was present once in 1991. This narrative characterizes the performance of U.S. companies, particularly those in the tech sector, as experiencing a strong resurgence and return to higher margins and efficiency. New corporate practices such as outsourcing are seen as the key enablers in making this resurgence possible. Next, an "Economic Leadership" narrative emerged in the mid 1990s and was present seven times in the sample. This narrative almost exclusively reports on the recent technological leadership demonstrated by U.S. companies, which are seen as far superior to most international competitors, aided by the growth of venture capitalists and a strong economy.

Finally, again similar to that in the cognitive pillar, a "New Economy" narrative emerged in the mid 1990s and became the dominant narrative by the year 2000. This narrative proclaims that the U.S. is entering a new period in which a technological shift will force the widespread displacement of traditional, "old economy" business models. While a lack of skills and resistance to change will exclude some from the benefits of this new era, the new economy's momentum is seen as unstoppable.

In step three, the categorization of each article's connotation of technology and innovation, three general phases can be described. First, from 1987 to 1991, the majority of articles that discussed technology carried a relatively positive connotation. These articles frequently stressed the importance of investment in new technologies and praised the efforts of organizations that successfully made such investments.

Then, from 1992 to 1996, while the majority of articles discussing technology remained positive, a large number of mixed connotations emerged. Thus, overall, the media remained optimistic about the future of technology and tech companies, but several articles did start to criticize the euphoria surrounding tech stocks.

Lastly, from 1997 to 2000, an overall positive connotation remained, but now mixed connotations were replaced with negative ones, with several articles reporting on periodic drops in tech stocks and others adamantly stating that a bust was about to occur. Figures 7.11 and 7.12 on the next page show the count and percentage of these connotations, while Table 7.3 on the following page provides a few quotations and topics for each connotation in each of the three phases.

Figure 7.11 Connotation of technology/innovation (by count), sampled media articles, 1987–2000

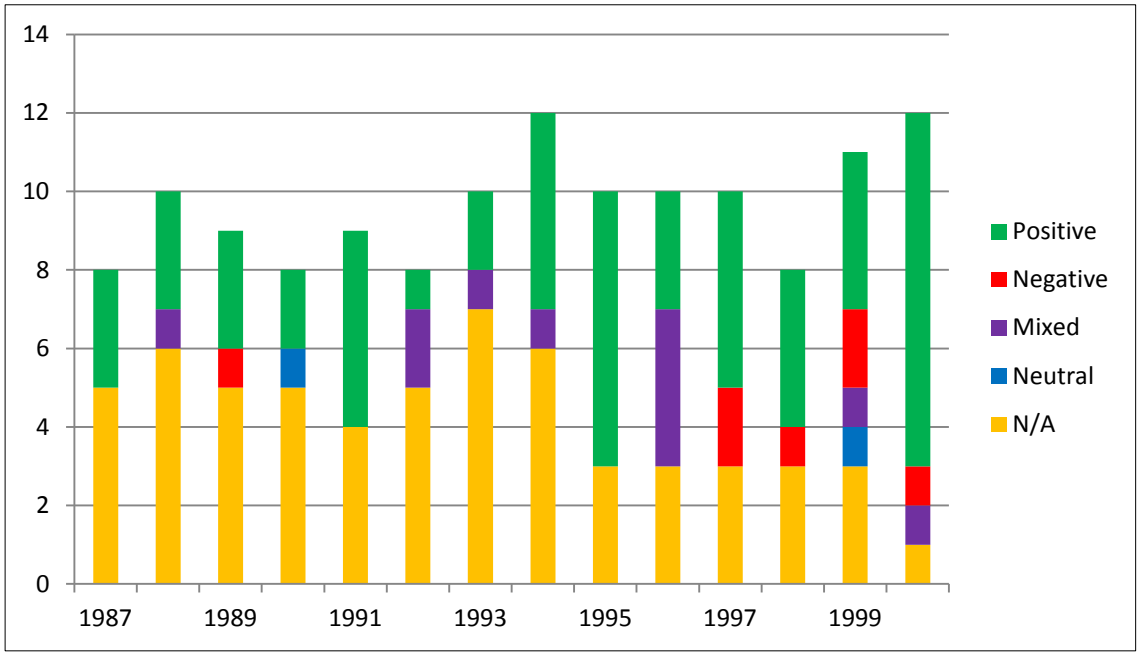
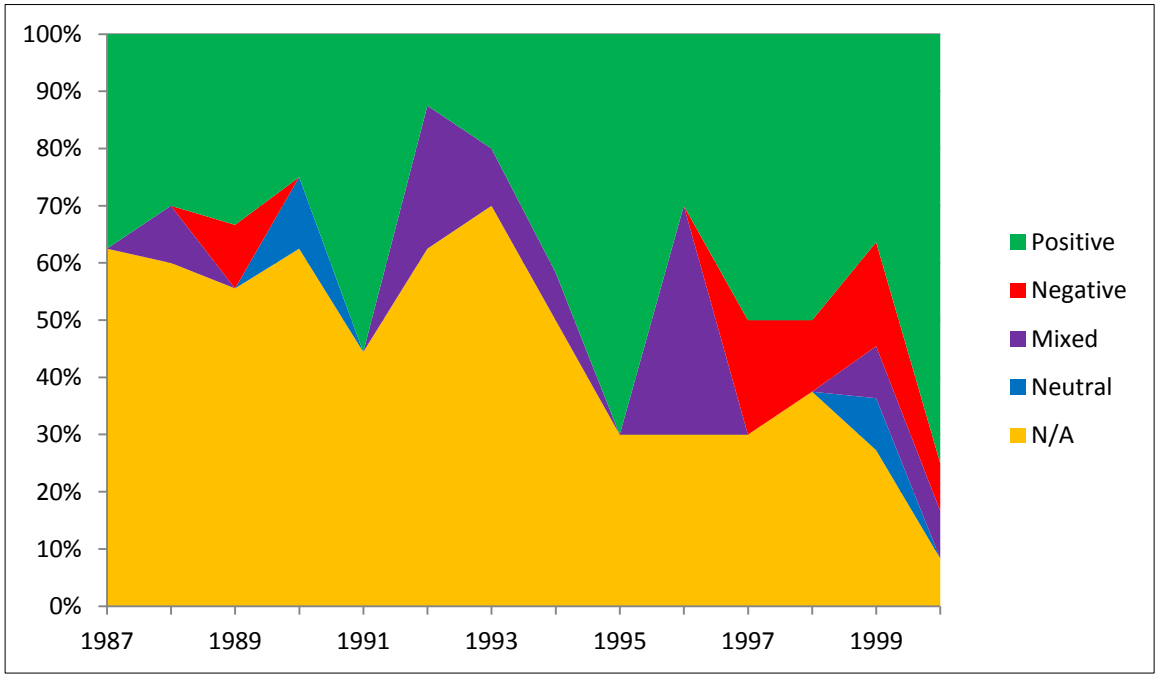


Figure 7.12 Connotation of technology/innovation (by percentage), sampled media articles, 1987–2000



Note: Each of the 135 media articles sampled was categorized according to one, and only one, of the five connotations.

Table 7.3 Selected quotations and topics for each technology connotation (sampled media articles, 1987–2000)

Connotation	Quotations and topics (1987–1991)	Quotations and topics (1992–1996)	Quotations and topics (1997–2000)
Positive	"Technology companies are likely to outperform the rest of American manufacturing in 1987, the Government predicted in an annual forecast." -The NY Times, 1987	"The biggest propellant in this trend toward smaller, even singular organizations: information technology (or IT), the computer network in particular, which substitutes market mechanisms…for the intracorporate coordination that used to go on…among the departments of a big, bureaucratic company." -Kiechel and Schonfeld, 1994	"From his offices in Half Moon Bay, Calif., Mr. Murphy, 56, argues that most investors are seriously underweighted in technology, which is the main sector in what he calls the 'new economy,' and seriously overweighted in the venerable corporations of the 'old economy.' " -Vickers, 1998
Negative	"Says John B. Jones Jr., Montgomery Securities' computer analyst: 'Technology stocks always had high risk and high reward. Now they have high risk and low reward. On a relative basis, technology sucks.' " -Sellers, 1989	No such speeches during this period	"Unfortunately, he adds, when it comes to Internet stocks, 'investors have elevated current mindshare to articles of faith. Religion does that too, and it's nonprofit.' Amen." -Interview with David Simons, managing director of Digital Video Investments, in Norris, 1993
Mixed	"Many funding boards seem obsessed with 'innovation.' As a result, innovation can mean desperation. You strive to be innovative. Yet, if someone thinks you're no longer innovative, your funding may be taken away." -Anderson, 1988	"In all, there have been some pretty loony goings-on in tech, and many investors have lost money. But this is not the end of technology's reign. It is, as Churchill once said, just the end of the beginning. There are some in this industry…that are breaking away from the wild, younger pack." -Serwer, 1996	"The good news is that while Marimba's not going to sport a $10 billion valuation, it's also much less likely to flame out as some of its highflying IPO brethren undoubtedly will." -Warner, 1999
Neutral	Workers moving from shipyards to high-tech -Salpukas, 1990	No such speeches during this period	China stealing technology -Schmitt, 1999

Similar to the U.S. economy narratives, the seven tech company narratives that emerged in step four are best organized according to their connotation. These narratives are outlined in Table 7.4 on the next two pages, while their frequency trends are provided in Figures 7.13 and 7.14 on the following page (and possess a similar color scheme to that for the economy narratives). Four of these narratives were negative or skeptical in their connotation.

First, a "Technological Decline" narrative, which was present four times, highlights a current slump in the previously successful technology sector. This narrative views tech companies as struggling due to soft demand, rising interest rates, and tough global competition, but also notes that new product development and government assistance can help these companies in difficult times.

Second, a "Technological Competitiveness" narrative, present seven times, mostly in the mid 1990s, stresses the competitive parity amongst tech companies. As consumers are demanding on both price and product attributes and new product development is extremely costly, tech companies frequently engage in price wars, making patents extremely valuable. Similar to that in the cognitive pillar, a "Technological Shakeup" narrative, present one time in 2000, notes that basic economic theory would predict a future winnowing of tech companies, where all but the most successful tech companies are likely to go bust. Also implying a future bust in the tech sector, a "Technological Euphoria" narrative, present twice during the stock run-up, sees the copycat behavior of tech companies and looming international competitors as key reasons that a boom-bust cycle is likely to repeat sometime in the near future.

In contrast, three of the narratives to emerge were rather positive in their connotation. A "Technological Growth" narrative, present 16 times, mostly in the mid 1990s, stresses the remarkable growth of the technology sector. Tech companies are seen as aided by strong executive leadership, venture capitalists, skilled workers, and mergers and acquisitions, while these same companies are impeded by imports, local competitors, executive feuds, and government red tape. Also stressing the strong growth in tech companies, a "Technological Revival" narrative, present twice, focuses on the recent resurgence in the technology sector, which is due in large part to factors such as outsourcing, economies of scale, cost savings, and the growing need for data processing.

Lastly, as in the cognitive pillar, a "Technological Dominance" narrative emerged. This narrative, which was present 22 times throughout the mid to late 1990s, sees the tech sector as fundamentally changing the U.S. economy. Risk-taking by tech-savvy entrepreneurs, who are aided by countless "obsessive" workers, is seen as the key driver of this transition to a new economy.

Table 7.4 Tech company narratives (sampled media articles, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Technological Decline	• Declining revenue • Slump • Inferiority to foreign companies	• Past success • Recent slump • Laissez-faire capitalism • Rise of foreign competitors	• New product development • Gov't help	• Soft demand • International and domestic competitors • Rising interest rates	"Computer companies' profit gains outpaced U.S. industry for a decade until 1986, but increases since then have run 39% below the all-industry average." -Sellers, 1989
Technological Competitiveness	• International and domestic competitiveness • Price wars	• Profit motives • Global competition • Laissez-faire capitalism	• Innovation • Meeting consumer demands • Patents • Funding	• International and domestic competitors • Demanding consumers • High costs • Safety concerns	"The audio industry spawns new equipment with the regularity of a brood hen hatching her chicks. Each new flock clamors for attention, and with so many products similar in concept and performance, it is often difficult to spot the standouts." -Fantel, 1987
Technological Shakeup	• Shakeup • Rebalancing	• Lessons from history • Basic economic theory	• Innovations • U.S. technological dominance • "New economy"	• Fierce competition	"The problem, however, is that there probably aren't more than one or two future Microsofts buried in Nasdaq—and at current prices, the Nasdaq market seems to be predicting there will be battalions of them. Yet in cases where companies achieve sky-high profit margins, economic theory and history predict that those high rates of return will eventually attract a slew of nimble, price-cutting rivals that will drive down the leaders' margins and profit growth." -Tully, 2000

Table 7.4 Tech company narratives (sampled media articles, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Technological Euphoria	• Euphoria • Bubble • Jumping on the bandwagon	• History of boom-bust cycles • Growing presence of tech sector • Recent stock highs	• Ubiquitous nature of tech sector • "Faith" in tech stocks	• Poor product quality • Gov't interference • Copycat behavior • Int'l competition • Business cycles	"But Wall Street's naïveté about what technology can deliver (and the mass media's parroting of this so-called expertise) have consistently fed nasty boom-and-bust cycles that make only a few people very rich, very quickly." -Caruso, 1996
Technological Growth	• Growth/profits • Above-average returns • Market share • Technological breakthroughs	• Laissez-faire capitalism • Decline in other sectors • Profit motives	• Tech manufacturers • Great leadership • Innovation/R&D • Venture capitalists • Skilled workers • Int'l sales/M&A	• Imports • Local competitors • Executive feuds • Slow mgmt procedures • Trade barriers • Patents/red tape	"In contrast to the highly speculative takeovers typical of the merger boom of the 1980's, the 1994 deals were dominated by corporations making strategic moves to increase their reach in industries like telecommunications…and high technology." -Zuckerman, 1995
Technological Revival	• Revival • Turnaround • Resurgence	• Recent slump • Growing importance of tech sector • Laissez-faire capitalism	• Outsourcing • Data processing • Cost savings • Economies of scale • R&D/new products • Knowing consumers	• Competition (including from corporate IT departments) • Low margins in hardware • Recessions	"Says Richard Pashley, general manager of Intel's memory components division: 'We're expecting the flash market to explode'—to $2 billion in 1995, from $130 million last year." -Solo, 1992
Technological Dominance	• Market dominance • Fundamentally shape and change economy • Riches • "Revolution"	• Profound shift in economy • Laissez-faire capitalism • Entrepreneurial spirit • "New economy"	• Constant innovation • Increased importance of tech sector • Risk-taking • Stock options • Obsessive workers • Venture capitalists	• Weakness in other sectors • Burnout • Human resistance • Gov't interference • Complexities of new business models	"Digitized information has become the lingua franca of our time. Transmitting that precious cargo is as critical to our economy today as the galleons transporting gold were to the economy of 16th-century Spain." -Serwer, 1995

Figure 7.13 Tech company narratives (by count), sampled media articles, 1987–2000

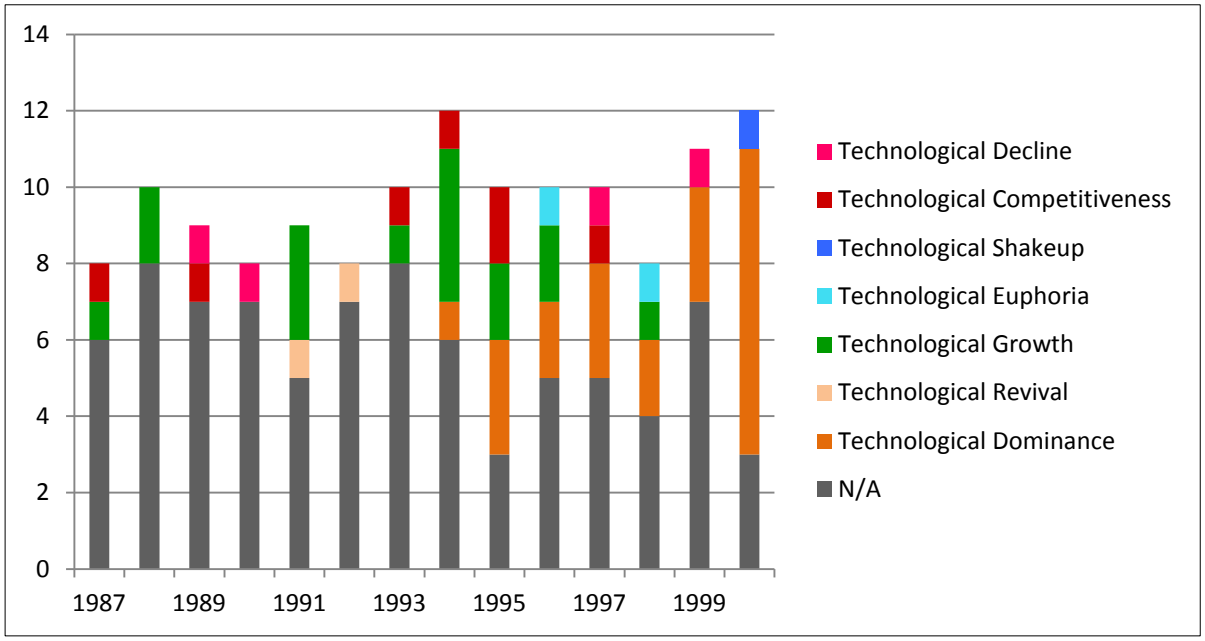
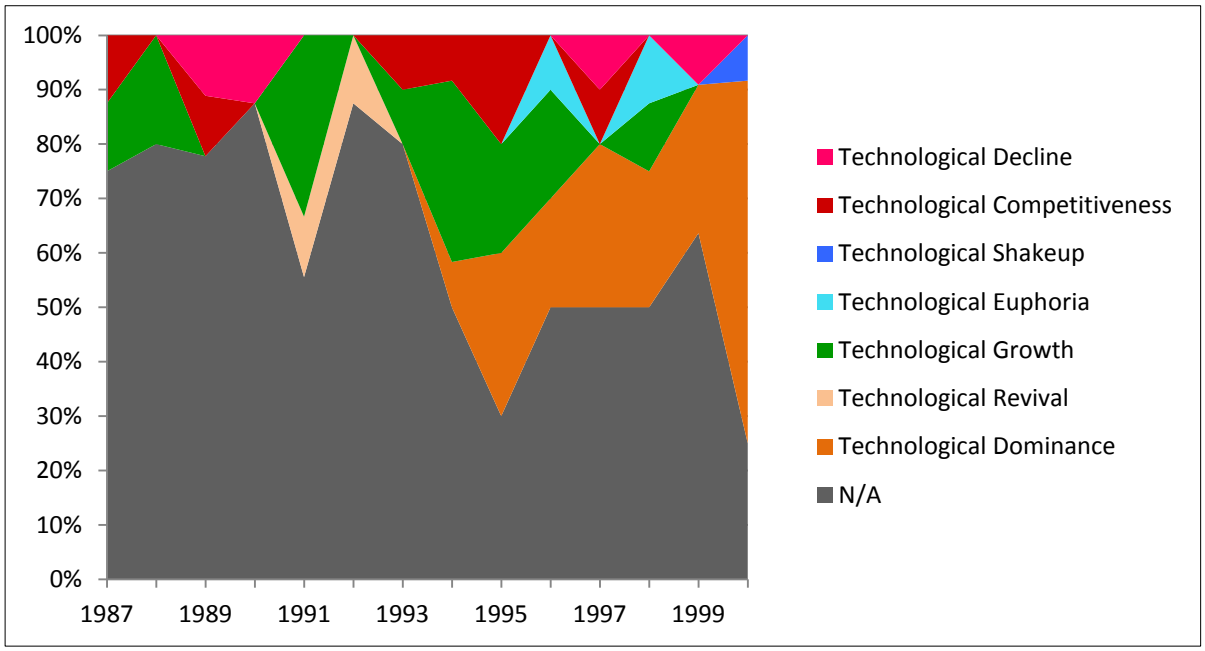


Figure 7.14 Tech company narratives (by percentage), sampled media articles, 1987–2000



Note: Each of the 135 media articles sampled was categorized according to one, and only one, of the seven narratives, except for 81 articles that did not possess a full narrative and were coded as N/A.

Step four also revealed nine U.S. stock narratives, which are presented in a similar fashion in Table 7.5 on the next three pages and Figures 7.15 and 7.16 on the following page. Four of these narratives were negative in their connotation. First, a "Stock Decline" narrative comments on a current or coming decline or correction in stock values, which are boosted by low interest rates and a strong economy but impeded by the opposite. This narrative appeared twice in the sample. Second, a "Stock Uncertainty" narrative, which appeared eight times, stresses the volatility and risk inherent in a specific group of, or all, stocks. This narrative notes that aggressive brokers and even speculators and a gullible public can help boost the market, while regulators, program (computer-driven) traders, and stock futures can increase the risk in stock purchases.

Third, a "Stock Shakeup" narrative, which appeared once in 1996, sees market euphoria as driving prices and predicts a shakeup or rebalancing of stock prices in the near future. Similarly, a "Stock Euphoria" narrative, present seven times, mostly in the late 1990s, stresses that stock prices are at unsustainable levels and are fueled in part by the recent surges in mutual funds and 401(k) plans.

A "Stock Cycles" narrative was present six times, mostly earlier in the sample period. This narrative observes that stock prices, just like the economy, are prone to cycles and gyrations due to investor psychology, rises and falls in interest rates, and various market disruptions such as a spike in oil prices.

The remaining four narratives were all quite positive. A "Stock Bargains" narrative was present twice and views drops in stock prices as ideal opportunities to buy. This narrative notes that fear and "misconceptions" will result in several investors missing out on the current buying opportunity. Similar to a "Sound Economy" narrative, a "Sound Stocks" narrative, which was present twice, sees U.S. stocks as a reliable long-term investment, primarily due to the U.S.'s strong institutions, rule of law, low interest rates, and low rate of inflation. Slightly more positive, a "Stock Growth" narrative, which was present three times, observes or predicts a healthy bull market in stocks and recommends buying in select sectors, particularly the strong tech sector and stocks of innovative companies or those that are currently expanding globally.

Lastly, a "Soaring Stocks" narrative, as was present in the cognitive pillar and appeared eight times in this sample, reports on the sky-high valuations of U.S. corporations. Tech sector IPOs, mutual fund flows, 401(k) growth, a robust economy, an increasing number of retail investors, and mergers and acquisitions (M&A) are all seen as key propellants of the U.S. stock surge.

Table 7.5 U.S. stock narratives (sampled media articles, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Decline	• Downturn • Decline • Correction	• Recent sharp rise/volatility • Investor culture	• Low interest rates	• Poorly performing sectors • Rising interest rates, the result of a strong economy	"With signs abounding that the economy is still strong, the Fed could keep raising rates—bad news for stocks. A number of experts think there's a correction in the offing: By several measures, such as the pallid 2.9% annual dividend yield of the S&P 500, stocks are overvalued." -Michels, 1995
Stock Uncertainty	• Uncertainty/risk • Volatility • Inefficiency	• Entrepreneurial spirit • Large gains and losses in stocks • Wary public • Stability in foreign markets	• Deregulation • Shareholder rights • Low interest rates • SEC (regulators)	• Gullible public • Int'l markets (Japan) • Program trading • Stock futures • Weak economy • Irrationality • Brokers/speculators	"The aspect of the Japanese market's performance gaining the most attention is its relative stability. Today Tokyo, not New York, is more and more being looked on as a possible model of how a stock market should be run…" -Sterngold, 1990
Stock Shakeup	• Shakeup • Rebalancing	• Wall Street greed • Investor culture	• Strong performance of tech stocks	• Speculation/euphoria • Manipulation • Poor corporate results • Institutional investors dumping stocks • Large, institutional investors	"The tech-stock shakeout of recent months isn't just a matter of the changing fortunes of high-tech companies. It's about big gambles, wild emotions, full-throttle greed, and possibly even market manipulation." -Serwer, 1996

Table 7.5 U.S. stock narratives (sampled media articles, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Euphoria	• Euphoria • High prices • Unsustainable levels • Bubble	• Investment culture • Laissez-faire capitalism • Recent stock run-up • Wall Street greed	• Tech stocks • 401k's • GDP growth	• Euphoria • Mutual fund managers • Low corporate earnings • Oversupply • Wall Street analysts • News media • New investors/risk	"In short, the New Economy doctrine made no sense at all, and without that intellectual justification there was no way to regard the great stock market boom as anything other than a bubble. Yet as long as inflation stayed low and the market continued to rise, skeptical voices were ignored." -Krugman, 1997
Stock Cycles	• Cycles/gyrations • Steady long-term returns • Recession and recovery	• Investor psychology • Recent market turmoil	• Optimism • Large pool of investors • Steady investments • Low interest rates	• Pessimism/overselling • Market disruptions • High oil prices • Alternative investments (bonds)	"…Elliott [accountant R. N. Elliott] had found objective proof that markets move in recurring cycles reflecting investor psychology." -Elliott, 1987
Stock Bargains	• Bargains	• Investment culture • "Beat the market" mentality	• Low prices in certain sectors • Low growth, inflation, and interest rates • Strong fundamentals • Tech stocks	• Risk • Investor fear • "Misconceptions"	"The technology sector finished 1997 down nearly 14 percent from its yearly high. Do you think that presents an opportunity? [Michael Murphy:] Yes…But instead of buying them [big tech companies] at whatever P-E they are and getting killed on the stock price, buy them only when they're down." -Vickers, 1998

Table 7.5 U.S. stock narratives (sampled media articles, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Sound Stocks	• Trustworthy, reliable • Well-regulated • Safe investment	• Need for public trust in stock market • Investor culture	• Strong institutions • Rule of law • Strong economy • Low interest rates • Low inflation • Mutual fund growth	• Corruption/fraud • Insider trading • Manipulation • Illiquidity • Debt overhang • Poor corp. results	"But the outlook for stocks for the rest of the decade—a decade in which inflation has all but died, interest rates have been tame and the economy has continued to chug along—appears sound at this point." -Wyatt, 1996
Stock Growth	• Bull market/rally • Healthy returns	• Investor culture • Laissez-faire capitalism • Improving stock performance	• Innovation • Knowing customers • Strong tech sector • Product development • M&A • Global expansion	• Market bears • Corporate slowdown • “Profit taking” by institutional investors	"It was the Chinese Year of the Rooster, but investors who ignored Chicken Little probably had something to crow about in 1993." -Teitelbaum, 1994
Soaring Stocks	• Extremely high valuations	• Laissez-faire capitalism • Strong recent returns/bull market	• Tech sector (IPOs) • Mutual fund flows • 401k’s • Retail investors • Robust economy • M&A • Foreign investment • Low interest rates	• Euphoria/bubbles • Possible slowdown in mutual funds • SE Asia turmoil	"Morgan Stanley's index of 35 bellwether tech companies, which includes giants like Microsoft, Intel, and IBM, was up 57.6% last year, following a 34.7% rise in 1994. In contrast, the Standard & Poor's 500-stock index rose 34.7%. The 57% increase also masks whopping climbs in various subsectors of technology." -Hylton, 1996a

Figure 7.15 U.S. stock narratives (by count), sampled media articles, 1987–2000

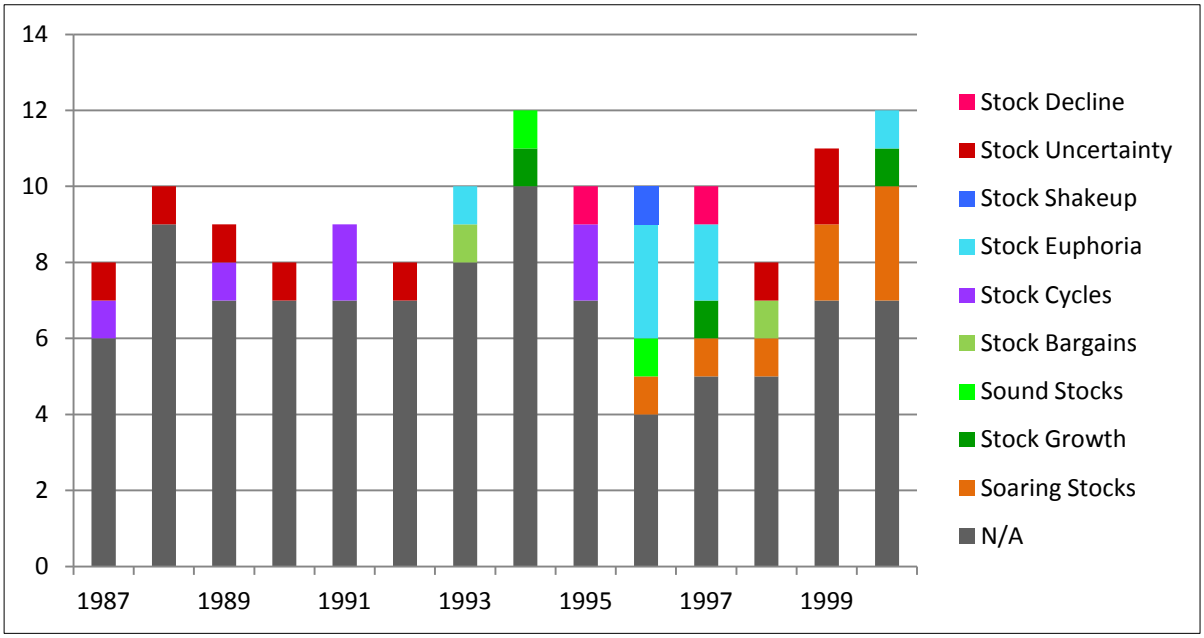
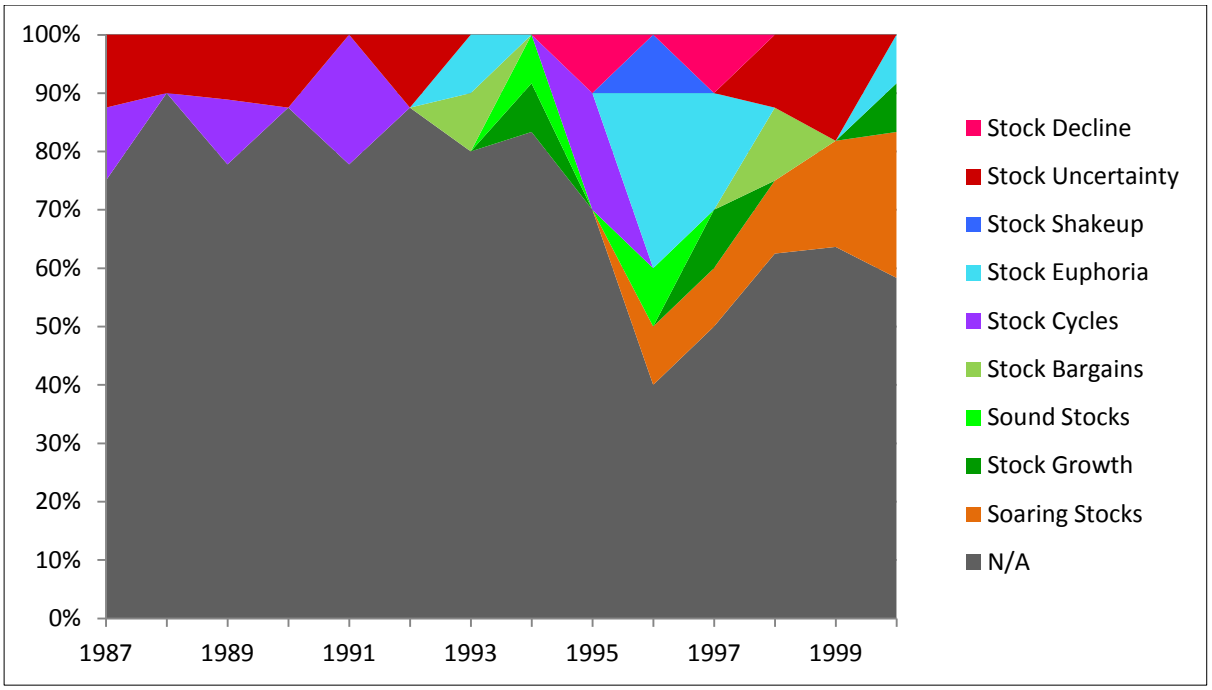


Figure 7.16 U.S. stock narratives (by percentage), sampled media articles, 1987–2000



Note: Each of the 135 media articles sampled was categorized according to one, and only one, of the nine narratives, except for 96 articles that did not possess a full narrative and were coded as N/A.

7.2 Institutional features

For the normative pillar, the fourth stage of analysis revealed six interrelated means by which boom narratives became institutionalized and two reasons why efforts to deinstitutionalize these narratives failed. In terms of institutionalization, the normative pillar possessed four means that were similar to the cognitive pillar, which were 1) the spread and repetition of boom narratives, 2) the transition of a boom narrative to destinator, 3) rationalizing conflicting evidence, and 4) providing support with expert references. Two additional means of institutionalization were present in this pillar, those being 5) the use of emotional triggers and 6) carefully selected historical data. These six methods are explained in detail below.

7.2.1 The spread and repetition of boom narratives

As demonstrated in the previous section, a large variety of boom narratives emerged and spread in the media sample. Looking at the U.S. economy narratives that emerged in this sample, an "Economic Revival," "Economic Leadership," and "New Economy" narrative all imply that investments in the U.S. economy should deliver significant returns for the foreseeable future, thus constituting boom narratives.

From 1987 to 1993, these narratives accounted for only one of the 62 media articles, while 17 of the 62 articles possessed a rather negative economic narrative. In contrast, from 1994 to 2000, 22 of the 73 articles (30 percent) expounded a boom narrative, while only 8 of the 73 articles (11 percent) possessed a negative or at least skeptical economic narrative.

At the asset level, first looking at tech company narratives, both a "Technological Revival" and a "Technological Dominance" narrative would constitute boom narratives. From 1987 to 1993, only two of the 62 articles included such a narrative, while five the 62 articles possessed rather negative tech company narratives. Again, a huge shift occurred starting in 1994. From 1994 to 2000, a "Technological Dominance" narrative was present in 22 of the 73 articles, while only nine of these 73 articles (12 percent) possessed a negative or skeptical tech company narrative.

When reviewing U.S. stock narratives, the media was somewhat more balanced in the late 1990s, but the shift in discourse over the entire sample period was almost as dramatic. From 1987 to 1993, the media sample did not include a single boom narrative on U.S. stocks, while six of the 62 articles (10 percent) possessed a negative or skeptical narrative. Then, from 1994 to 2000, eight of the 73 articles expounded the boom narrative of "Soaring Stocks," while 12 of the 73 articles (16 percent) possessed a negative or skeptical stock narrative.

Hence, overall, from 1987 to 1993, 62 articles produced only three instances of a boom narrative, while from 1994 to 2000, 73 articles produced 52 counts of a boom narrative[23]. This dramatic shift in discourse occurred at two of the most well-respected media outlets in the U.S., if not world, particularly in terms of their credibility in reporting economic and financial market news. As a result, these narratives and this overall shift in discourse acquired widespread social legitimacy.

7.2.2 Boom narrative destinator

Quite similar to the trend described in the cognitive pillar, the theme of technology underwent a significant transition in discourse over the sample period, with a rapid technological shift eventually becoming the destinator of the "New Economy" narrative.

At the beginning of the sample period, in the late 1980s and early 1990s, several articles possessed a rather negative or pessimistic view of tech companies, particularly U.S. tech companies, which were seen as struggling to keep up with technologically (and managerially) superior Japanese firms. Previously provided quotes in Sellers' (1989) article express such negativity, along with the following quote from an interview with Dr. Frank Moore, who was the program manager of the Ohio Advanced Technology Center in 1990 (in McInnis, 1990):

> "It's not so much that we lack technology," he added. "Where we seem to fail is in moving that technology to the marketplace. You'd be hard pressed to find an American-made microwave oven. We invented it. We just didn't stay competitive."

Over the next few years, while a few articles did provide favorable reviews of tech companies, the tech sector was often altogether ignored, particularly in the discourse on U.S. stocks. For instance, Teitelbaum (1991) predicts an imminent economic recovery and advises readers to get back in the market: "With many economists—including FORTUNE's own—expecting an economic rebound sometime during the first half of 1991, it's a smart time to load up on stocks." While the article provides a few recommendations, such as investments in the leisure sector, there is no mention of tech stocks.

Similarly, Norris (1993) recommends equities as the best place for investment and even notes a recent 16 percent rise in the NASDAQ; however, also similarly, tech stocks go completely unmentioned. In the same year, portfolio manager William Nasgotivz (Nasgovitz and Sheeline, 1993) also agrees that stocks are the best means of investment at the time and recommends several sectors: "The stocks of regional brokerage companies are amazingly cheap…There's a feeding

[23] Remember that a single article was analyzed for the presence of up to three narratives. Thus, 52 here does not constitute 52 of the 73 articles.

frenzy on Wall Street right now for restaurant stocks." As with the previous two examples, though, tech companies were not even on the radar.

In the mid 1990s, however, the theme of technology underwent a swift transition, being not only discussed more but also discussed in a much more positive manner. During these years, tech companies, and their suppliers, were often promoted as great stock buys:

> Mark Koprucki, an analyst at Ohio Co., expects net income [at Applied Innovation, which mainly sells to the telecommunications industry] in 1994 to surge 67%, to $6 million, on a 66% increase in revenues, to $25 million. (Labate, 1994a)

> Ann Schwetje, an analyst at Smith Barney, expects net income [at Cable Design Technologies (CDT)] for the fiscal year ending July 1994 to surge 62% to $9.7 million, on a 14% rise in revenues, to $145 million…CDT has carefully picked its electronic cable niches. The Pittsburgh company designs and produces copper and fiber-optic cables for some of the fastest-growing sectors in the high-speed data market. Half its sales come from supplying cables for companies upgrading their computer networking operations, including Bell Atlantic and Citibank. CDT's other products include wires for the innards of mainframe computers, sold to original equipment manufacturers like IBM. (Labate, 1994b)

This transition continued, with technology soon being viewed as the underlying force propelling both U.S. stocks and the U.S. economy to new heights:

> A new, quirky, more democratic U.S. economy is emerging, its information technology-laced networks of services and goods taking the ground once towered over by huge corporate ziggurats of the old industrial system. (Kiechel and Schonfeld, 1994)

> Technology stocks have been the Road Runner of this bull market. Like that gravity-defying cartoon character, tech has zoomed to ever higher heights after each setback and left the rest of the market in the dust. (Hylton, 1996a)

Thus, by the mid 1990s, when a "Technological Dominance" narrative became the prevailing tech narrative, technology's profound impact on the economy—alongside the U.S.'s remarkably sudden reclamation of its leadership role in technology—became the taken-for-granted context that enabled a "new economy" to emerge.

7.2.3 Rationalizing conflicting evidence

As with the cognitive pillar, several expounders of boom narratives—in this case primarily journalists, analysts, consultants, and the like—were confronted with unfavorable information or trends. In these situations, individuals frequently rationalized such information as being either

irrelevant or, in some cases, supportive of their claims. This method was used in response to three situations in the media sample: 1) sky-high stock valuations, in which P/E ratios and other economic indicators read similar to those during previous stock bubbles, 2) falling stock prices, and 3) some analysts ignoring the tech sector in their market coverage.

As early as 1993, some financial journalists noted that stocks were in fact rather expensive when compared to historical P/E ratios and other market indicators. In the sample, Norris (1993) comments, "It is not, of course, that stocks are cheap. By most valuation standards, they are far from that…And much of that money is going into the riskiest funds, the kind that buy small stocks and hope they will soar…It is tempting to dismiss such things as euphoria and the kind of overconfidence that is present at market tops. And it may be correct to do so."

As stock prices continued to rise into the mid 1990s, P/E ratios stretched even further from their historical averages, conveying that stocks may well be overvalued and already in bubble territory. These sky-high valuations were, however, rationalized by several analysts and journalists, as demonstrated in the following excerpt (from Hylton, 1996a):

> Investors can also ease their anxiety with the knowledge that today's craze differs from past manias in several respects:
>
> First, despite their spectacular price increases, many of the most profitable computer software and hardware companies are still selling at reasonable multiples to 1996 estimated earnings, book value, and cash flow. The semiconductor sector, for example, is selling at an average trailing P/E ratio of 20 and a 1996 estimated P/E of only 13. The current P/E of the S&P 500 is roughly 17. Since 1980, the peak P/E range for tech stocks has been between 31 and 34. Currently the 250 top tech stocks have an estimated 1996 P/E of 25.
>
> Second, the three-year to five-year growth-rate estimates for those 250 companies is a robust 25% a year, according to IBES, a research firm that tracks Wall Street's earnings forecasts.
>
> Third, demand for computer-related products is picking up steam all over the world—and in all categories. In the U.S., for example, technology now absorbs 50% of capital spending, vs. 33% eight years ago. In Europe, PC sales are increasing at double-digit rates.

Thus, sky-high stock valuations were justified as reasonable because some P/E ratios had in fact been higher before, growth estimates were favorable, and the tech sector's influence was now spreading across the globe. These were certainly not the only means of rationalization. Tully (2000) notes that analysts also referred to massive inflows of money (from foreign investors, mutual funds,

and 401(k)'s), shrinking risk premiums, and various forms of "new economy" arguments as to why quickly rising P/E ratios should not be a concern.

A second scenario conflicting with the various boom narratives of the mid 1990s was that stocks did occasionally drop, sometimes rather swiftly, with the years 1996 and especially 1998 witnessing rather steep falls. Individuals in the media sample were able to rationalize these drops in two ways. First, claims were made that steep drops were not signs of trouble but rather were buying opportunities, as seen in the following two excerpts:

> With fund managers licking their wounds, and analysts injecting some new realism into their forecasts, there's a chance that technology stocks will once again be viewed as vehicles for investment, not speculation. And while you wait for that happy turn, you can pick up some of America's finest technology companies at today's bargain prices. (Serwer, 1996)

> But there was some logic to why stocks rose from an apparent abyss to solid double-digit gains for the year. On Oct. 1, when financial markets appeared on the verge of imploding, the Dow Jones industrial average fell by more than 210 points and closed less than 100 points above 7,539.07, the low it hit on Aug. 31. Since then, foreign markets have staged a comeback. The steep slide in United States stock prices was seen by many as a buying opportunity. Third-quarter earnings were not as bad as expected. Perhaps most important, the Federal Reserve Board and more than 50 central banks around the world have cut interest rates. (Gilpin, 1999)

In other words, during those drops, stocks were momentarily undervalued and represented bargain buying opportunities. In a similar line of reasoning, other individuals rationalized that market drops were merely signs of profit-taking by large, institutional investors. Such an argument actually presented market drops in a rather positive manner, as slumps indicated investors were making healthy profits and would surely be back in the market soon enough, as exemplified in the following two excerpts:

> …but what we're seeing here is simply some profit taking in big-cap stocks. A lot of institutional investors moved to the sidelines in the early part of December and raised cash by taking profits on winners. I wouldn't be surprised to see a bounce later in the month. (quote of Gordon Fines, owner of stock fund, in Amour and Fines, 1997)

> "It was a good quarter for us," said Daniel J. Schaub, senior vice president and director of corporate finance at A.G. Edwards & Company in St. Louis, but he added that business had slowed down earlier than usual. "It appeared institutions locked their profits in early," and took off for a slightly longer vacation than usual, he said. (Truell, 1998)

A final scenario that emerged in the sample was when Michael Murphy, one of the most widely followed tech investors of the era, was questioned in 1998 as to why some analysts still ignored or overlooked the tech sector in their broader market analysis and recommendations. Murphy (while expounding a "Stock Bargains" narrative) rationalized this conflicting evidence with the following:

> More than 90 percent of analysts are still covering the old economies, either the old mass-production economy, which is where most of the big, comfortable corporate names are, or the even older industrial economy. The reason…is that Wall Street puts its research where the investment banking fees are going to be. (Vickers, 1998)

In all three scenarios, the rationalization of conflicting evidence left various boom narratives as seemingly unquestionable. And in some cases, instead of conflicting evidence being viewed as reason to possibly doubt the prevailing narrative, this evidence was used to support the view that all was well in both the economy and the tech sector.

7.2.4 Expert references

A final means of institutionalization that was similar to that explained in the cognitive pillar was the use of expert references. In contrast to the Federal Reserve speeches, where the vast majority of expert references were to economists, the media sample consisted of a much broader array of expert sources, including numerous types of analysts, traders, tech company executives, professors (mainly in business and economics), venture capitalists, consultants, and investment bankers.

References to these sources were plentiful and remained fairly consistent over the sampled texts (other than the observation that venture capitalists were referenced more and more during the rise of the tech sector), and thus the narratives present in the media sample were just as much a sample of these sources as they were of financial journalists.

References to a wide array of experts conferred a sense of further legitimacy upon each boom narrative. That is to say, the narrative could not be seen as merely the journalist's individual opinion, but rather it could be portrayed as consensus view amongst a wide variety of market participants.

The following quotes from various market analysts, and the selected quotes in Table 7.6 (next page) of a broader variety of experts, demonstrate the legitimacy and authority such sources added to each boom narrative:

Table 7.6 Examples of expert references (sampled media articles, 1987–2000)

Narrative	Expert	Selected quotation
Technological Dominance	Tech executive	"Nevertheless, Junkins [CEO of Texas Instruments (TI)] is confident that his innovations will prove indispensable. Says he: 'We are providing the technology that is enabling the digital revolution to take place.' Wall Street seems to agree. Already enjoying a boost because of the surge in semiconductor stocks, TI shares got an additional push when the company announced better than expected financial results in late January. There's more than smoke and mirrors to what Jerry Junkins is up to at TI." -Schonfeld, 1995
New Economy	Professor	"Says Howard Stevenson, professor at the Harvard Business School: 'The old economy was built on a revolution in isometric standards. So mass production was the key to getting rich. Today there is a revolution in transmission. That means, to get rich, take advantage of transmitting information.' " -Serwer, 1995
Soaring Stocks	Research analyst	"Says Laszlo Birinyi, who runs his own research firm out of Greenwich, Connecticut, of today's tech run-up: 'This is not an irrational market for these stocks. You might call it a lower-case mania, but remember that this is a sector with enormous earnings and growth potential. In the early 1980s the multiples on many of these stocks were higher than they are now.' " -Hylton, 1996a
Soaring Stocks	Investment banker	"What kept the markets so robust, Mr. Birle [a managing director in equity capital markets at Merrill Lynch] said, was 'the continued flow of funds into equity markets from mutual funds, asset-allocation adjustments, the continued cross-border flows of capital' and 'the vast number of privatizations.' " -Truell, 1998
Technological Dominance	Venture capitalist	" 'Is it ethical to fund a company [Napster] that's doing something illegal, knowing that eventually we'll figure out a way to do it legally?' he [an anonymous venture capitalist] wondered aloud over lunch recently." -Warner, 2000
Soaring Stocks	Consultant	" 'I would be surprised if January is not an extremely good month, regardless of what happened in December,' said Avi Nachmany, a partner at Strategic Insight, a New York mutual fund consultant." -Wyatt, 1997b

And if there are negative earnings surprises in 1996, the temporary downturn may be more vicious. So far, however, that eventuality looks remote. Concludes Robert Austrian, a technology analyst at Morgan Stanley: “No matter how you slice it, tech stocks have had a huge run, and there will be pauses along the way. But the long-term trend is very positive.” (Hylton, 1996a)

The last change like this was in the early 1990’s. The people who earned the really high returns recognized that a new economy was under way and shifted assets into that area. (spoken by Michael Murphy, in Vickers, 1998)

> Few expect the current enthusiasm to continue. But the excitement generated among investors by the Internet's potential is justified, analysts said. "The Internet is the most exciting business phenomenon since the airplane or television," Mr. Wien of Morgan Stanley said. "It is truly a dramatic life-changing event, an open-ended situation investors have not been confronted with for some time. To say that this is a fad is an easy trap to fall into. But this is bigger than that." (Gilpin, 1999)

7.2.5 Emotional triggers

Unique to the media sample was the frequent use of emotional triggers, which can be defined as the practice of appealing to emotions in an argument or story. These emotional appeals convey a clear sense of social legitimacy to an argument and shift the debate from "This is one way of doing something" to "This is how something should be done" or even "This is what everyone is doing." In the sample, two broad types of emotional triggers were present, which were the use of 1) envy and 2) fear, mainly the fear of missing out.

As early as 1994, news articles were already reporting on the vast amounts of wealth made by tech entrepreneurs and executives: " 'The software industry in the United States grew up dramatically and made a lot of millionaires before anyone thought we should patent any of this,' said Michael Kurtz, vice president and legal counsel of Oracle…" (Markoff, 1994). The extraordinary sums of money being made conferred even more legitimacy to the entrepreneurs, executives, and investors in the tech sector—and their advice. For example, the title of a 1997 Fortune article (Armour and Fines, 1997) read: "A big fan of big stocks: The head of an $11 billion growth fund is bullish on big-cap stocks with global clout. He's also betting on health care, telecoms, and agribusiness."

But these stories of riches being made in the technology sector conveyed much more than just legitimacy to tech executives and investors. They also conveyed a powerful sense of amazement, possibility, and envy to the reader, as seen through the following two excerpts:

> ...Page Net's initial public offering coined ten new millionaires. "People want stock, and it feels damn good when it works out,"…Don't bother telling that to David W. Huggins, 64, founder and CEO of RMS Technologies. He's already made a fortune bulldozing bits and bytes. RMS does consulting in the data transfer business...Given the demand for that kind of service, it's not surprising Huggins's company has doubled revenues to $115 million over the past six years...One change, though: invitations to join boards of directors. Huggins serves on a dozen, including those of the Philadelphia Fed and Drexel University. (Serwer, 1995)

> [Jim] Clark's story is classically American; he is a Gatsby fated to endless self-reinvention. A high school dropout from Plainview, Texas, he spent the first part of his life acquiring grudges—against his wastrel father, his hometown, and the Navy. Success, writes Lewis, "became a form of revenge." In the early `60s, Clark got a Ph.D. in the then-new discipline of computer science and lived as an academic gypsy until, nearing 40, he settled at Stanford and developed a complex computer chip called the Geometry Engine. Clark's chip made possible the first computer-generated three-dimensional graphics, which enabled the design of nearly anything on a computer—cars, airplanes, and the dinosaurs of Jurassic Park. The new chip spawned his first company, Silicon Graphics. After a restless few years, he abandoned Silicon Graphics to co-found Netscape with Marc Andreessen, whose browser opened the Internet to the masses. By the early `90s, Clark was a billionaire and more. (Ferguson, 1999)

The success stories of both Huggins and Clark are extremely enticing. Moreover, some articles conveyed the sense that one did not even need to work in the tech sector to share in the riches. Kelley (2000) describes the trend in nonprofits raising money by buying discounted shares before tech companies went public: "Other nonprofit agencies are also trying to use the phenomenal growth of Internet companies to finance their operations. The Community Foundation Silicon Valley has been given many directed shares, and the right to buy others at insider prices, by several Internet companies."

Other articles conveyed the sense that mostly ordinary (and even boring) individuals were the ones making millions: "Mothersbaugh spoke to one guy who said he made 'routing systems,' and was worth $250 million. But the guy has no idea what to do with his money and figures he'll just go start another company. And people thought Devo was weird" (Warner, 2000). Thus, by the late 1990s, seemingly everyone could make money off the tech sector's rise to market dominance.

Fear, mainly the fear of missing out, was another frequent emotional trigger used in the media sample. Early on in the sample, in 1993 and 1994, those who bet against the market were often disparaged, being referred to as "losers" and compared to Chicken Little:

> The big losers were professional short-sellers, who bet that stocks they deemed to be overvalued would decline. (Norris, 1993)

> It was the Chinese Year of the Rooster, but investors who ignored Chicken Little probably had something to crow about in 1993. (Teitelbaum, 1994)

This persecution of market bears continued into the mid 1990s, including warnings that spending four years earning a degree may result in readers missing out on the current technological shift:

> Technology changes so rapidly that it may be a better idea not to go to school for four years because so much of what you have learned is obsolete. (And your diploma is in classics?). (Kiechel and Schonfeld, 1994)

> Even if `74 [when stocks fell by 26 percent] rings a bell, avoiding the market remains a risk, too…Investors hoping for another year of better-than-30-percent gains in stock prices are likely to be disappointed. But fearful investors who stay on the sidelines will probably be worse off. (Wyatt, 1996)

Hence, individuals who bet against market gains may be given derogatory labels such as "loser," while those who stand on the sidelines or make alternative investments (such as in a bachelor's degree) are likely to miss out on the new economy and its potential windfall gains. The power of fear in turning skeptics into euphoric market bulls was noted several times in articles expounding critical views of sky-high stock prices, as commented by Serwer (1996), "Any fund manager who doubted the profit potential of tech stocks felt chastened indeed, and many then joined in…" and Hylton (1996b), "Every market tends to be met with skepticism most of the way up, but there comes a point when the fear of risk is overtaken by the fear of missing out."

7.2.6 Carefully selected historical data

A final means of institutionalization, which was also unique to the media sample, was the use of carefully selected historical data. When discussing recent trends in stock price movements, the tech sector, or the U.S. economy, journalists and quoted sources in the media sample made use of a wide variety of historical data, which here refers to the use of statistics, examples, and anecdotes of past performance.

Certainly, any use of historical data requires a selection process. That is to say, the journalist or source must decide on not only what type of data to use but also the cutoff dates (where to start and stop the statistics or example), the source of the data (what country, company, research entity, etc.), how much data to include (and what to leave out), and even how to present the data (in a positive or negative tone, etc.). Such a complex selection process arguably gives the journalist or source more power than the data itself.

The importance and power of this selection process became apparent when tech companies and their stocks, many of which were listed on the NASDAQ, staged a revival in the mid 1990s and then soared to astronomical levels a few years later. When this happened, several articles expounding the boom narratives of "Technological Dominance" and "Soaring Stocks" reported on this phenomenon in an almost exclusively positive manner by selecting only positive historical data, as seen in the following excerpts:

> And the Nasdaq, weighted heavily with technology company stocks, performed amazingly, rising 29.45 percent, just shy of its best quarter ever. (Gilpin, 1999)

> According to IPO Monitor, since Jan. 1 some 52 Internet companies have gone public, with nearly three-quarters racing into the market at a value more than 40% above their offering price. (Warner, 1999)

> Last year, the three major American stock indexes produced double-digit returns for the fifth consecutive year—an unprecedented feat—and the technology-heavy Nasdaq index popped off the charts. (Fuerbringer, 2000)

In these excerpts, journalists made the decision to focus solely on the terrific recent gains in U.S. tech stocks. Such a decision also required the journalists to omit data on the volatile performance and stock returns of tech companies in the late 1980s and early 1990s (as discussed in earlier articles such as in Sellers, 1989), the ongoing drop in the tech-heavy Japanese markets (which was almost entirely ignored in the sampled articles), and, in many cases, the historical similarity between current price levels and past market bubbles (such as the 1920s stock bubble, which was not mentioned a single time in the sampled articles).

However, the technique of carefully selected historical data took on even more power in instances where articles gave the impression that above-average returns were *always the case* with U.S. stock markets, as seen in the following excerpt:

> An investor in a mutual fund that matched the performance of the Standard & Poor's 500-stock index, among the most watched market indicators, would not have suffered an annual loss of more than 5 percent in any year since 1977. Seven times in those 18 years, the annual return on the S.& P. 500 exceeded 20 percent, assuming all dividends were reinvested...Even in 1987, when stocks took a frantic tumble, falling 22 percent in one day, the S.& P. index finished the year with a gain of 5 percent. (Wyatt, 1996)

This excerpt seemingly implies that U.S. stocks have always been a safe place for investment. Of course, starting the data in the year 1977 and only mentioning the S&P 500 are crucial in conveying such an argument—with the steep market drops of the 1930s, 1960s, and 1970s and the tepid returns of the 1940s and, at times, the NASDAQ providing a much different story.

Similarly, other articles gave the impression that, despite countless instances of historical downturns, you simply could not lose in U.S. stocks. Such an impression was strongest when articles reported on individuals or organizations with almost no expertise or in-depth knowledge of tech companies or U.S. stocks making fortunes in the market:

> The nonprofit agency's board must approve stock purchases, even at advantageous prices, because of the risk that the stock could drop below its initial offering price. So far, Mouse's board *has not lost money on any stock*, and it has made enough in profits to create an endowment worth more than $500,000. The earnings of that pool of capital finance the organization's work in schools. (Kelley, 2000, emphasis added)

While also almost certainly triggering envy amongst other nonprofits that are not in the market, the careful selection of stock winners (again, with no mention of the historically unprecedented P/E ratios or the (im)probability that all of their stock purchases would remain in the black) provides a powerful source of institutionalization.

The power of carefully selected historical data, along with the other five means of institutionalization explained above, also helps to explain why efforts to counter the boom narratives associated with the tech bubble failed. In addition to these factors, this stage of analysis revealed two specific reasons why efforts to deinstitutionalize the prevailing boom narratives were not successful: 1) as in the cognitive pillar, but not quite as unbalanced, texts that truly attempted to challenge the discourse found in boom narratives were the minority, and 2) those who did challenge the prevailing euphoria were, at times, discredited. These two reasons are further explained below.

7.2.7 Minority status

As noted at the beginning of this section on institutional features, from 1987 to 2000 the media sample became increasingly positive, particularly towards the U.S. economy and the tech sector. In fact, from 1995 to 2000, only one article (Kover, 1997) possessed a strictly negative connotation of the U.S. economy, while the remaining articles with slightly negative or skeptical economic narratives still maintained a balanced (mixed) view of economic prospects. Similarly, but not quite as unbalanced, during that same time period there were only six articles that possessed a strictly negative view of tech companies. Thus, overall, while the idea of forever-soaring stock prices was frequently challenged in the media, the view that U.S. companies were entering an entirely new economic era propelled by the unprecedented advancements in information technology (thanks mostly to innovations at U.S. companies) went largely unchallenged.

When looking solely at the U.S. stock narratives, an interesting finding is that from 1995 to 1997, at the beginning of the market run-up, eight of the 30 articles (27%) possessed a negative or skeptical stock narrative, while from 1998 to 2000, the peak of the market run-up, only four of the 31 articles (13%) possessed such narratives. That is to say, in contrast to the reactionary discourse

found at the Federal Reserve, the media texts frequently argued that prices were too high at the start of the bubble, but these efforts seem to have withered as prices continued to soar higher.

7.2.8 Discrediting skeptics

This last observation may help to explain the presence of another apparent reason why efforts to deinstitutionalize the tech bubble's boom narratives failed, that being the act of discrediting skeptics. As already mentioned in the subsection on emotional triggers, market bears were sometimes referred to as both "losers" and "Chicken Little." In fact, several articles seemed to express satisfaction with the observation that bearish economists were proved wrong:

> Despite a relentless chorus of bearish prognosticators, the feisty American Stock Exchange surged 16.6% for the year, the over-the-counter market rose 12.1%, and even the lumbering Big Board was up a respectable 7.6%. (Teitelbaum, 1994)

> With more and more signs that the economy is not slowing down as forecast by many economists… (Fuerbringer, 1999)

This satisfaction with the apparently inaccurate forecasts of market bears was taken one step further in the following excerpt:

> About the only people still around to rekindle the memories of those dark days, and to warn that the good times will not last, are financial journalists. And many of them have been wrong about stocks for nearly a decade. Simply put, the biggest risk to individual investors in recent times has come from not being invested in the market. (Wyatt, 1996)

Seemingly, those brave enough to warn of market euphoria were not only sometimes disparaged but also discredited as having been wrong time after time. As a result, the skeptics of 1995 to 1997 looked increasingly foolish from 1998 to 2000 as stocks continued their upward climb. Perhaps embarrassed by their "blunder" or afraid of further persecution, these media skeptics may have toned down their criticism at the precise time that markets truly lost all connection with reality.

7.3 Summary

In this chapter, I demonstrated how, from 1987 to 2000, articles from *The New York Times* and *Fortune*, two media outlets that possessed great power over societal discourse, gave increased attention to the topics of technology and a new economy, particularly at the peak of the tech bubble circa 1999 and 2000. Additionally, around the year 1993, their portrayal of the U.S. economy shifted from a pessimistic outlook to an overwhelmingly positive outlook, as narratives of strong

growth, economic leadership, and a new economy flourished. Similarly, a narrative of technological dominance became commonplace, with contrasting narratives of decline and euphoria falling into a small minority.

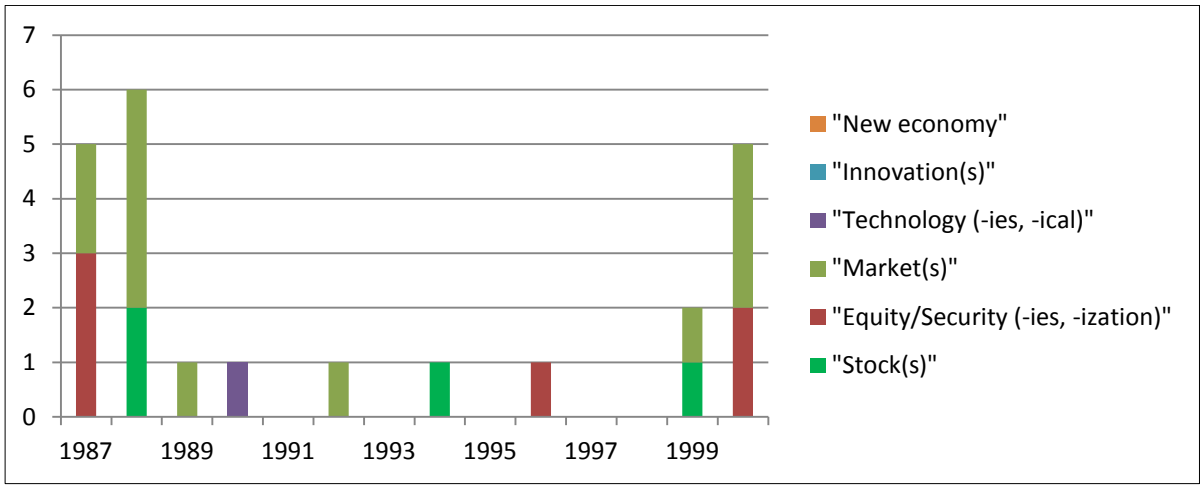
During these years, the boom narratives expounded in these two media sources acquired widespread legitimacy and appeared as thoroughly institutionalized. Six factors were identified in this regard, those being the spread and repetition of these narratives, the use of one boom narrative (technological dominance) to support another (new economy), the rationalization of conflicting evidence, support via expert references, the use of emotional triggers such as fear and envy, and the selection of only positive historical data. Quite a few media articles did, however, attempt to challenge the euphoria surrounding (tech) stocks. While somewhat common at the beginning of the tech bubble, though, these efforts appeared to dissipate over time as share prices climbed higher and higher. In addition, those early skeptics were frequently discredited as the bubble continued to grow, which may explain their almost complete disappearance as prices started to peak.

CHAPTER 8: THE TECH BUBBLE'S REGULATIVE PILLAR

This chapter presents findings from the regulative pillar of institutionalization, which refers to established rules and laws that coerce and constrain actions and behaviors. Regulative sources are noted for possessing great institutional power, for they have the ability to punish and penalize non-compliance. For this study, the regulative pillar is represented by hearings from the United States Senate Committee on Banking, Housing, and Urban Affairs. From 1987 to 2000, there were 259 full committee hearings held by this committee. The findings of the initial sampling stage are presented in Figure 8.1 below.

Two important observations can be made from this preliminary search. First, while the words "stock(s)," "equity/security (-ies, -ization)," and "market(s)" appear throughout the sample period, their frequency spikes in both 1987/1988 and 1999/2000. Of important note is that four of the five references made in 1987 occurred before the stock market crash of October 19, while all of the remaining references in 1987/1988 are in response to the crash.

Figure 8.1 Keywords in hearing titles (by count), full committee hearings by the Senate Committee on Banking, Housing, and Urban Affairs, 1987–2000



Source: U.S. Senate Committee on Banking, Housing, and Urban Affairs

Notes: These keywords were searched in all 259 full committee hearings from 1987 to 2000. Included were all oversight, legislative, and field hearings. Oversight hearings review a law, issue, or activity; legislative hearings are held on measures or issues that may become public law; and field hearings are any type of hearing held outside of Washington, D.C. Titles searched were those provided in the Committee's legislative calendar, which are available on the Committee's website. While each title could include two or more keywords, no keyword was counted twice in the same title (only one relevant case was found for this situation).

Second, throughout the sample period, there is only one reference to technology, in the year 1990, entitled "Declining competitiveness in America's industrial, technological, and financial base," with no references at all to innovation or the new economy throughout.

The 18 hearings that included these keywords thus became the sample data for this chapter, with those hearings representing seven percent of all hearings from the U.S. Senate Committee on Banking, Housing, and Urban Affairs from 1987 to 2000[24]. Each of these 18 hearings consisted of statements (both prepared and unprepared), testimony, and discussion by a number of senators and witnesses. Thus, for this pillar, each speaker and his or her statements were treated as an individual item and coded as such[25]. In total, 200 items were present in these 18 hearings. Appendix 3 provides the reference information for each of these items, along with their citation codes that will be used throughout this chapter.

8.1 Narrative analysis

The results from step one, the categorization of each item's connotation of the U.S. economy and/or U.S. companies, are presented on the following two pages in Figures 8.2 and 8.3 and Table 8.1.

For this pillar, these connotations are best described in three general phases. First, from 1987 to 1990, the vast majority of the connotations were negative (88 of the 123 items, or nearly 72 percent), with most of the remainder being mixed. Only five items during this period were positive, all in 1987. This negative tonality was primarily the result of the 1987 stock market crash but was also caused by discovery of insider trading abuses and other instances of market manipulation on the major exchanges.

[24] Three of the 18 full committee hearings were held for more than one day (100-481, 100-649, and 102-991). For these hearings, only the first day of statements and testimony was analyzed. This decision was made for several reasons. One, analyzing all statements and testimony from such hearings would have given them a heavy bias in the results section, such as Senate Hearing 100-649, which lasted four days and thus included far more individual statements and testimony than other hearings. Second, including additional days would have resulted in an extra 1,000 pages of data to analyze, with Senate Hearing 102-991 alone almost totaling 1,000 pages. As all of the hearings for this sample were rather lengthy and included numerous voices, I felt that this sample, sans these extra days, contained sufficient data to represent the regulative pillar. Again, my goal was not an exhaustive analysis of all discourse during this period (which would be impossible anyway) but rather a probing, sophisticated analysis of a very relevant sample from this period.

[25] An individual's statements were not necessarily confined to one continuous section. For instance, an individual may give an opening statement but then be questioned later on in the hearing during a panel discussion. All of these statements by an individual were analyzed as a collective whole, not separately. That being said, statements were only analyzed collectively for any one given hearing. Thus, if the same individual spoke at two or more hearings (which was quite common), those statements were analyzed separately. A final note here is that some documents, such as research papers, were attached to the hearing report at the request of a witness or senator. These documents were not analyzed but all references to them were.

Figure 8.2 Connotation of U.S. economy/companies (by count), sampled Senate statements, 1987–2000

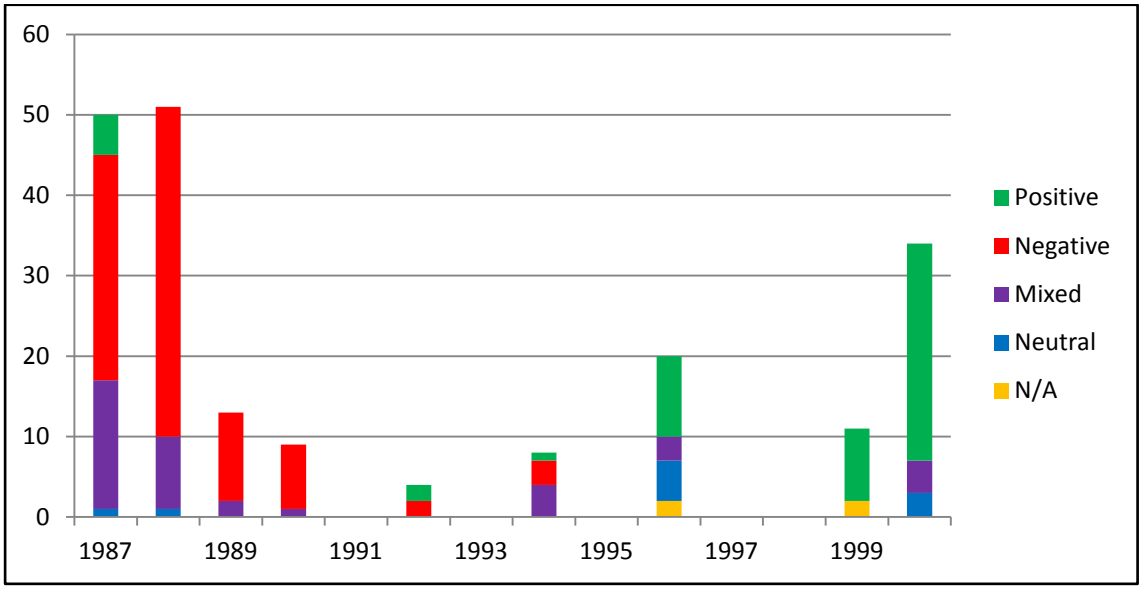
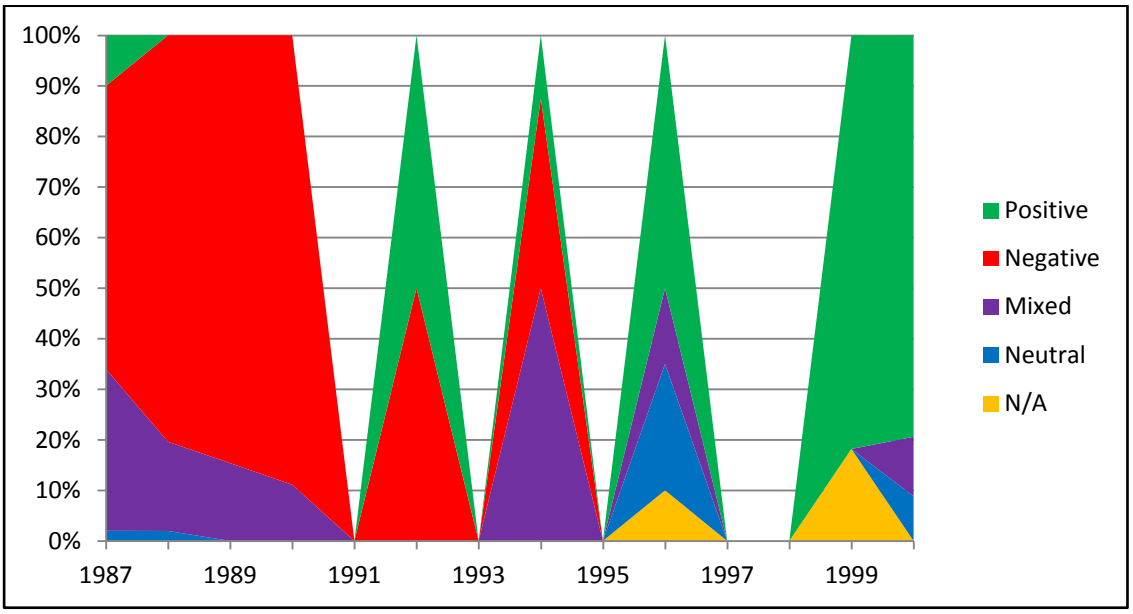


Figure 8.3 Connotation of U.S. economy/companies (by percentage), sampled Senate statements, 1987–2000



Notes: Each of the 200 statements sampled was categorized according to one, and only one, of the five connotations. Also, while the years 1987 and 1988 resulted in a large number of individual statements, this relative imbalance had no impact upon the findings of this chapter. The only effect of such a large sample from these years was that a great deal of extra, and largely redundant, analysis was required for this time period. In contrast, keyword searches for the years 1991, 1993, 1995, 1997, and 1998 did not result in any hearings/statements. However, the years in between resulted in a sufficient number of statements/hearings to allow for a historical comparison of the narratives that emerged at the U.S. Senate.

Table 8.1 Selected quotations and topics for each U.S. economy connotation (sampled Senate statements, 1987–2000)

Connotation	Quotations and topics (1987–1990)	Quotations and topics (1992–1994)	Quotations and topics (1996–2000)
Positive	"When we look at what makes America different than any other countries [sic], it is the ability to raise capital for American businesses, and with that, the highest standard of living in the world, the best wages and the best working conditions." -Hecht, April 22, 1987	"Again, I would just like to emphasize, it looks easy to raise capital now in a bull market." -Carson, Feb. 25, 1994	"I don't think there has ever been a better period in our history for investors. These are good economic times and good times for capital formation." -Schwab, Feb. 29, 2000
Negative	"We heard what I found to be very disturbing testimony yesterday from representatives of the Securities Industry Association that many, many individual investors have simply left the market." -Sanford, April 20, 1988	"The United States is projecting a very weak recovery from the recession." -Sarbanes, April 17, 1992	No such speeches during this period
Mixed	"As we all know, the market events of October were dramatic and historic, and their effects are still being felt. While these events showed how resilient our markets are, they also revealed weaknesses. In particular, we now know that market structures and trading strategies at times can cause volume and volatility that overwhelm the current capacities of our markets." -Ruder, March 31, 1988	"…[mutual to stock] conversions for the most part are beneficial…However, the conversion process can be and has been misused." -D'Amato, Feb. 25, 1994	"While I believe that both industries [futures and securities industries] have created the world's most liquid markets, I am concerned that certain key equity market structure issues, if not properly addressed, could have a detrimental impact on healthy competition and on investor protection." -Brodsky, May 8, 2000
Neutral	Globalization of capital markets -Karnes, Oct. 13, 1987	No such speeches during this period	Liquidity of securities -Bennett, April 13, 2000

From 1992 to 1994, connotations were evenly mixed, with a few positive (3 of the 12), negative (5 of the 12), and mixed (4 of the 12) connotations. Then, from 1996 to 2000, the mood shifted dramatically to being overwhelmingly positive, with 46 of the 65 (nearly 71 percent) items being positive and not a single instance of a negative connotation.

Due to the large number of items in this sample, as expected, step two produced a large number (19 in total) of U.S. economy and/or company narratives. These narratives are outlined in Table 8.2 on the next five pages. Figures 8.4 and 8.5 on the following page reveal the frequency trends of these narratives.

Similar to the previous two chapters, these narratives are color-coded according to their connotation, with negative narratives coded shades of red or blue, neutral narratives coded purple, moderately positive narratives coded shades of green, and extremely positive narratives coded shades of orange and yellow.

Nine of the narratives were largely negative or pessimistic about the U.S. economy and future prospects or changes. The vast majority of these narratives appeared between the years 1987 and 1994, as seen in Figure 8.4. An "Economic Crisis" narrative formed early on and eventually appeared 70 times in response to the market crash of October 1987. This narrative comments on and foresees turbulence and volatility in the nation's economy and stock markets, arguing that only tougher regulation, a balanced Federal budget, and stricter margin requirements can subdue the crisis, which was caused by factors such as investor irrationality, program trading, derivatives, and past policy blunders.

Even before the crash, though, many speakers expounded a "Shaken Economy" narrative, which appeared 10 times in 1987. This narrative sees a recent spate of scandals on Wall Street as shaking investor confidence in U.S. markets, a problem that requires tougher penalties and greater surveillance of market activity.

After the crash, mostly in the year 1990, a narrative of "Economic Decline" was common, appearing eight times. This narrative notes a worldwide economic downturn and sees the U.S. as losing its competitive edge to foreign powers such as Japan and Germany. Only increased investment in research and development and new technology and better long-term planning can prevent the U.S. from falling further behind these competing exporters.

Table 8.2 U.S. economy/company narratives (sampled Senate statements, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Crisis	• Crisis • Turbulence • Volatility • Loss of faith	• Recent market crash • U.S. as historic market power	• Regulation/oversight • Margin requirements • Int'l cooperation • Balanced budget	• Budget/trade deficits • Taxes/protectionism • Irrationality • Technology • Policy blunders	"One of the most severe fallouts of the recent 'crash', 'panic', 'correction' or 'adjustment' is that it seems to have completely shaken the faith in the viability of the economy." -D'Amato, Nov. 4, 1987
Shaken Economy	• Shaken • Losing confidence	• Scandals • Strong capital markets (historically)	• Regulators • Surveillance • Technology • Penalties • Int'l cooperation	• Greed • Complexity • Uncertainty • Weak penalties • Int'l markets	"…I think there could be a major problem with public confidence in the market and in the fairness and the freeness of the market, not just the fact that it's a free market." -Giuliani, April 22, 1987
Economic Decline	• Decline • Losing competitiveness • Struggle	• Worldwide economic slowdown • Scandals on Wall Street	• R&D/technology • Long-term planning • Better education • Productivity • Exports	• Wall Street greed • Foreign competition • Budget crisis • Predatory behavior of Japanese	"Too many investment bankers, too many lawyers, too many M.B.A.'s appear to be looking only for a fast buck profit, and yet the fast bucks are being made at the expense, I fear, of America's competitiveness and particularly our industrial competitiveness…" -Heinz, April 22, 1987
Economic Abuse	• Abuse • Manipulation	• Recent stock scandals • Significant changes in business environment	• Prompt regulatory response • Reform	• Greed • Lax regulations	"Insiders at mutual savings bank—the very trustees who have a fiduciary duties [sic] to the depositors—may seek to convert the institution to stock form in order to profit financially from stock options and other preferential stock distributions." -D'Amato, Feb. 25, 1994

Table 8.2 U.S. economy/company narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Uncertainty	• Uncertainty • Troubles • Weak recovery	• Japan's crash • Problems in Europe • Problems in real estate and banking	• Productivity • Exports • Healthy banks • Stimulus/easing • Stock stability	• Int'l turmoil • Bank failures • Stagnant economy • Tax burdens • Fraud	"…I take if you took it because you see the U.S. economy as weak, and the possibility of what some are now calling a triple dip recession. And we need, obviously, to explore that possibility." -Sarbanes, April 17, 1992
Economic Competitiveness	• Int'l and domestic competitiveness • Getting left behind • Efficiency	• Increased foreign deregulation • Tough int'l competition • Strong markets	• Deregulation • Prudent policies • Quality control • Customer focus • R&D/education	• Out-dated regulations • Foreign competition • Trade barriers • Budget deficits • Congress inaction	"Because we generally deny firms the ability to offer both commercial and investment banking services in the United States, we unnecessarily limit the ability of our own firms to compete in the various markets around the world and we restrain the growth of our own markets." -Mendoza, Oct. 13, 1987
Unfair Economy	• Unequal, unfair economic gains	• Income inequality • Asset holding inequality	• Fair laws and policies	• Fees for poorer households	"I think it's fairly clear that the 39 percent of all American families that have less than $1,000 in total financial assets will not benefit in the least from increased entry into mutual funds by bank holding companies." -Fox, Aug. 6, 1987
Economic Risk	• Risk, risky changes	• Fragile financial system • Strong corporate sector • Global competition	• Strong banks • Risk management • Fair accounting rules • Safeguards • Prudent policies	• Increased deregulation • Poor efficiency of U.S. banks	"I have deep reservations about the wholesale repeal of the act unless certain issues are considered and resolved…will the explicit and implicit deposit insurance guarantee propagate to the securities activities of the bank?" -Heinz, Aug. 6, 1987

Table 8.2 U.S. economy/company narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Public's Economy	• Public benefit (not just private)	• Increased deregulation	• Competition • Lower costs • Increased supply • Safeguards	• Unknowns	"I want to see us identify and evaluate the benefits and costs to the public—I repeat, to the public—of permitting bank holding companies to underwrite mutual funds, mortgage-backed securities, and municipal revenue bonds…" -Proxmire, Aug. 6, 1987
Economic Cycles	• Cycles • Recessions and recovery	• Historical industry cycles • Recent recessions and bull markets	• Long-term, patient capital • Strategic alliances • Stable regulations • Technology/R&D	• Int'l competition, primarily from Japan and Europe	"The downturns and the inevitable upturns in our industry require careful investment and planning by investors and managers." -Schacht, Sept. 14, 1990
Economic Expansion	• Expansion • Competition • Growth	• Undersupply in securities market • Changing financial marketplace	• Deregulation • Investment infrastructure	• Red tape/burdensome regulations	"…it certainly seems that the public will ultimately be the winner by allowing increased competition in the securities area." -Karnes, Aug. 6, 1987
Moderate Economic Growth	• Moderate growth	• Recovery from crash • Recent recession	• Low inflation • Stronger financial markets	• Stock volatility • Foreign competition • Market abuses • Strict regulations	"We continue to believe that the economy is well-balanced, with prospects for continued moderate growth. I am pleased to see this morning the GNP figures of good, solid growth, with a lowering of the rate of inflation." -Brady, Oct. 26, 1989

Table 8.2 U.S. economy/company narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Sound Economy	• Strength, health • Stability	• High U.S. working and living standards • Recent scandals	• Great business minds • Wall Street • Regulation • Prudent policies • High trading volume • Strong capital markets	• Over-regulation • Overreaction by Congress • Greed • Piecemeal reform	"Wall Street has served America very well, and before we undertake drastic changes, we should proceed with extreme caution." -Hecht, April 22, 1987
Economic Growth	• High growth • International growth • Vitality	• Global investment environment • Largest capital markets in the world (U.S.)	• Tech companies • Small businesses • Venture capitalists • Deregulation • Retail investors	• Out-dated regulations • Excess investment fees • Foreign competition • Regulatory overlap	"The bill will create a new category of unregistered private investment companies that will help venture capitalists tap the capital market to fund new start-up companies." -D'Amato, June 5, 1996
Economic Revival	• Recovery • Resurgence	• Stock rebound • Renewed growth	• Regained investor confidence • Prudent policies • Strong capital markets	• Rash policies • Overreaction by Congress • Low savings rate • Leverage/speculation	"Further, the markets have recovered somewhat as investor confidence has slowly been regained. Ample economic evidence of these trends is contained in Chairman Greenspan's testimony." -D'Amato, March 31, 1988
Explosive Growth	• Explosive growth	• U.S. with dominant capital markets • Rapid tech advancements	• Tech sector/start-ups • Effective regulations • Free markets • Privatization	• Burdensome regulations • Excess transaction fees	"The explosive growth of securities market activity in the past several years...have caused the amount of fees collected to greatly exceed the SEC's budget." -Helsby, Feb. 28, 2000

Table 8.2 U.S. economy/company narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Economic Leadership	• Worldwide economic leadership • Respect from all countries	• U.S. with world's strongest capital markets • Tech revolution	• Strong leadership • Tech start-ups • Prudent policies • Transparency • Integrity	• Burdensome regulations • Market fragmentation • Excess transaction fees • Protectionism	"Participants in our equity markets have succeeded in concentrating a great depth of liquidity that is the envy of other nations and a symbol of the United States as the world's preeminent financial power." -Greenspan, April 13, 2000
Structural Shift	• Radical transformation • Rapid growth	• Growing U.S. economy • Tech revolution • Economic leadership	• Technological advancements • Competition • Free markets	• Burdensome regulations • Global competition • Fear of change	"My concern is that in our human tendency to fear change, we tend to bask in legacies of past successes, forgetting that we can also become victimized by them." -Paulson, Feb. 29, 2000
New Economy	• "New economy" • Unprecedented growth and change	• Information age • Tech revolution • World's pre-eminent capital markets	• Tech start-ups • Venture capitalists • Competition • Privatization	• Burdensome regulation • Excess transaction fees • Market fragmentation • Fear of change	"New technology and dramatic change represent a wave of creative destruction; this new technology will create and destroy vast fortunes. I believe the net result will be a dramatic improvement in the efficiency of the American economy, and when the American economy can generate capital more efficiently then everybody in America, at least in the aggregate, is a winner." -Gramm, Sept. 28, 1999

Figure 8.4 U.S. economy/company narratives (by count), sampled Senate statements, 1987–2000

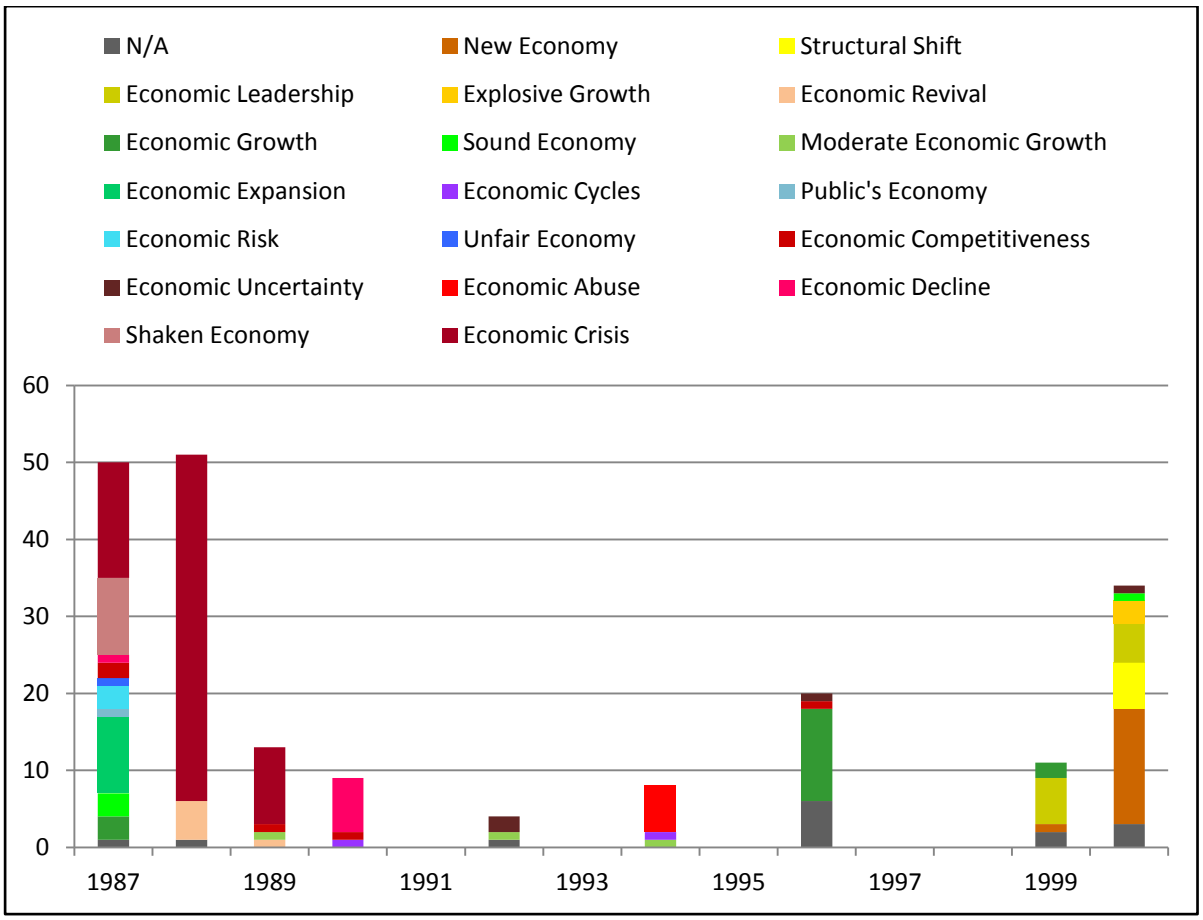
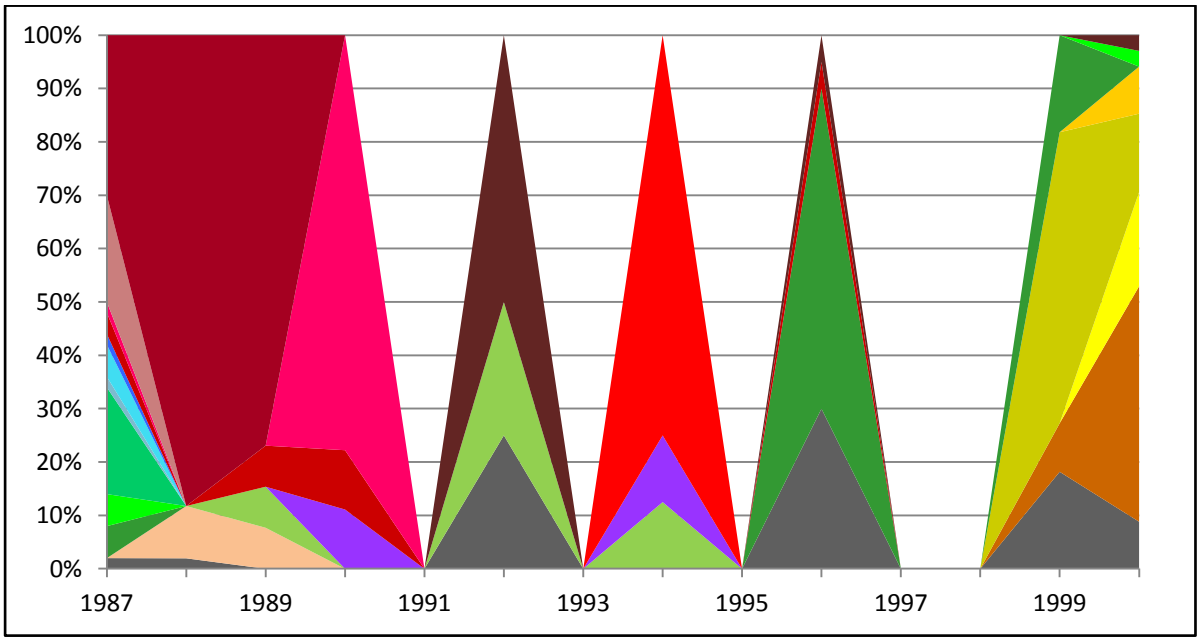


Figure 8.5 U.S. economy/company narratives (by %), sampled Senate statements, 1987–2000



Note: The legend in Figure 8.4 also applies to Figure 8.5.

Appearing six times in 1994 was a narrative of "Economic Abuse." This narrative criticizes the Wall Street greed and lax regulations that resulted in numerous cases of abuse and manipulation on stock exchanges and in the private sector. Also appearing in the mid 1990s were narratives of "Economic Uncertainty" (four times) and "Economic Competitiveness" (five times). These narratives were similar to those explained in previous chapters, while in the Senate, speakers tended to focus on how tax burdens, inaction at Congress, and budget deficits were key impediments to a healthy economy.

Two highly interrelated narratives of "Unfair Economy" and "Public's Economy" appeared in 1987, each one time. Both narratives argued for more equality in the nation's economic benefits, with an "Unfair Economy" narrative stressing that poorer households were getting left behind and a "Public's Economy" narrative focusing on how regulatory changes should primarily benefit the public, not private interests. A final negative narrative to appear, three times in 1987, was an "Economic Risk" narrative. This narrative warns that legislative changes could have side effects and damage an already fragile financial system and argues that numerous safeguards and risk management practices are needed to prevent unintended consequences.

One neutral narrative, an "Economic Cycles" narrative, appeared twice in 1994. Similar to the previous pillar, this narrative notes that recessions are followed by recoveries but also that bull markets result in downturns. Long-term, patient capital, as is common in Japan, is seen as the key to business prosperity.

Expounding a positive view of the economy were the narratives of "Economic Expansion," "Moderate Economic Growth," "Sound Economy," and "Economic Growth." These narratives were very common in the years 1987 and 1996. An "Economic Expansion" narrative was the only new narrative in this group, with the others being very similar to those explained in previous chapters. An "Economic Expansion" narrative, present ten times, argues that increased competition is good for expansion and growth and thus Congress should remove red tape and burdensome regulations on businesses. This narrative was mainly in response to the proposed removal of the Glass-Steagall restrictions on commercial banks.

Lastly, five narratives expounded an extremely positive view of the U.S. economy. These included narratives of "Economic Revival," "Explosive Growth," "Economic Leadership," "Structural Shift," "and "New Economy." These narratives were dominant in the years 1999 and 2000. "Explosive Growth" was the only new narrative in this group. Similar to an "Economic Growth" narrative, this narrative comments on the growth and vitality of U.S. companies, due in large part to growth in the tech sector and the benefits of privatization and securitization. However,

an "Explosive Growth" narrative stresses the unprecedented rate of growth in the private sector and sees Congress and its burdensome regulations as the only real impediments to U.S. business success.

In step three, the categorization of each item's connotation of technology and innovation, three phases can be described, as delineated on the next two pages in Figures 8.6 and 8.7 and Table 8.3. First, the period from 1987 to 1990 witnessed a large variety of connotations, but these connotations become increasingly negative in this period, with the vast majority (8 out of 9 or 89 percent) of connotations in 1990 being negative.

During this period, while the benefits of technological progress were often noted, speakers increasingly focused on how the U.S. was losing ground in terms of technology and innovation to both Japan and Europe. In addition, speakers highlighted the dangers of computer-driven program trading, a recent innovation that was blamed for much of the recent volatility on exchanges.

In the second phase, from 1992 to 1996, technology and innovation were rarely mentioned, with a few positive connotations appearing in the year 1996. Then suddenly, in 1999 and 2000, technology was not only mentioned in great number but also often the focus of or a key issue in most statements. In this final period, technology was seen as almost exclusively positive (with not a single negative connotation in these years), as speakers noted the recent revolution in information technology, the unprecedented growth in the NASDAQ exchange, and the many benefits of technological advances for retail investors and smaller exchanges.

The fourth step of analysis for this pillar first revealed three technology company narratives, all of which were present in the normative pillar. Overall, from 1987 to 1996, very few of these narratives emerged (only nine narratives in the first 155 items). The years 1989 and 1990 saw a surge in a "Technological Decline" narrative, which was present seven times in those years.

Similar to the normative pillar, this narrative sees U.S. tech companies as falling behind their foreign companies, particularly the "predatory" Japanese. Speakers urged Congress to remove any trade barriers that may be preventing U.S. firms from competing on an equal footing with foreign rivals. Investment in research and development, long-term planning, and improving the quality of math and science education in the U.S. were all seen as key enablers that would help the U.S. catch up in the coming decades.

Figure 8.6 Connotation of technology/innovation (by count), sampled Senate statements, 1987–2000

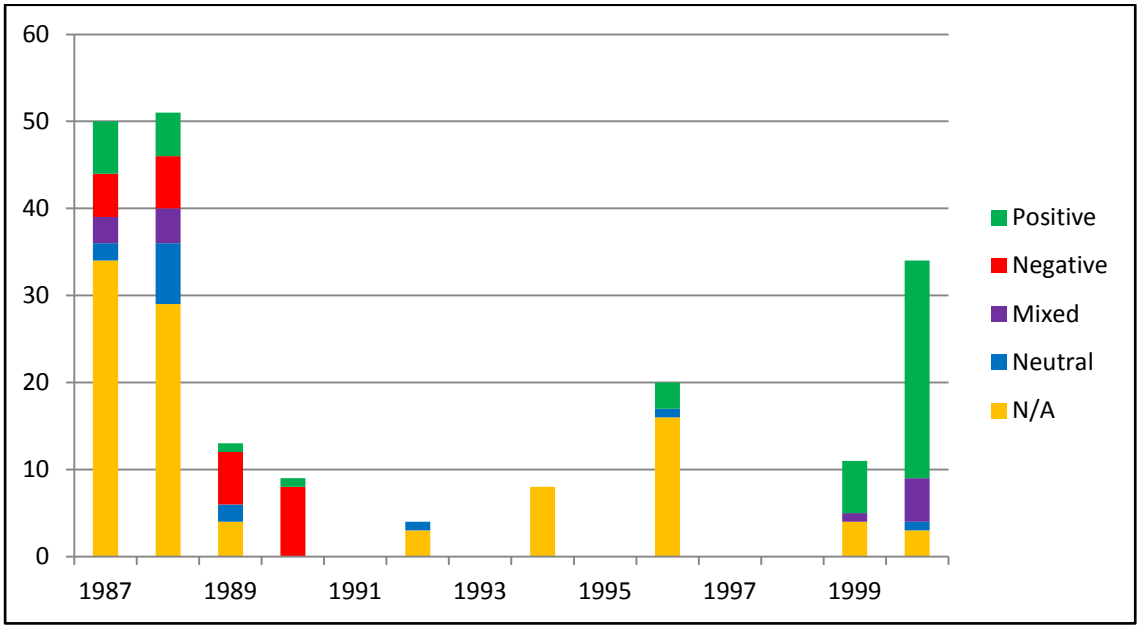
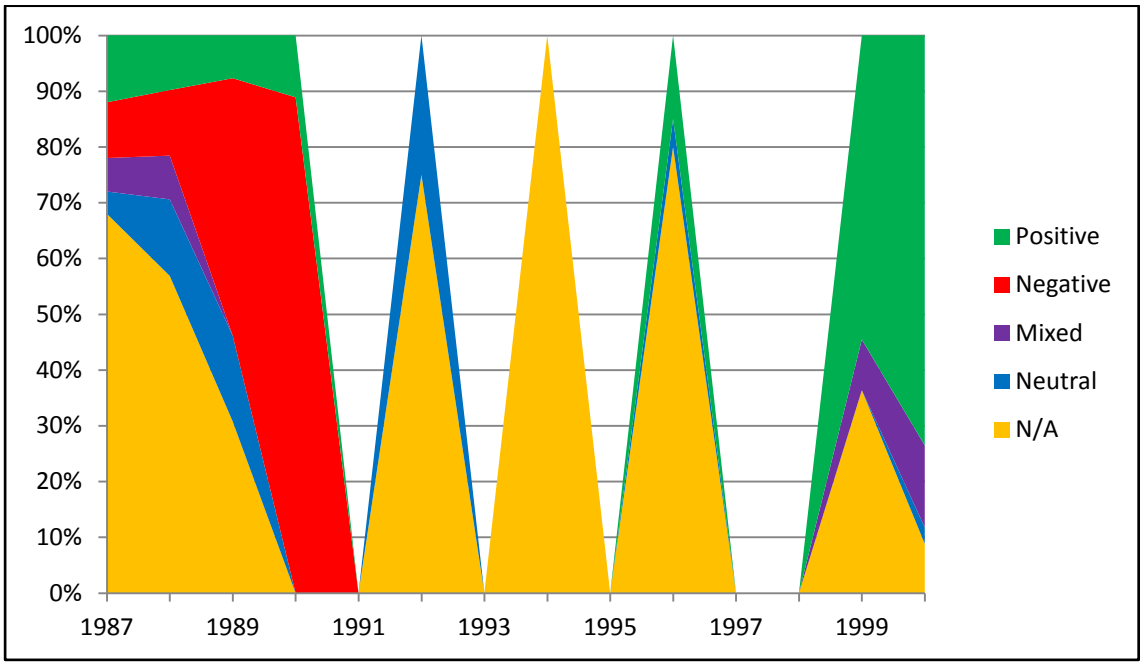


Figure 8.7 Connotation of technology/innovation (by percentage), sampled Senate statements, 1987–2000



Notes: Each of the 200 statements sampled was categorized according to one, and only one, of the five connotations.

Table 8.3 Selected quotations and topics for each technology connotation (sampled Senate statements, 1987–2000)

Connotation	Quotations and topics (1987–1990)	Quotations and topics (1992–1996)	Quotations and topics (1999–2000)
Positive	"We live now in a global market. Technology has made an enormous difference, and we have been able to make time virtually disappear in the 24-hour markets." -Proxmire, Oct. 13, 1987	"Venture-backed companies have included Apple, Federal Express, Intel, and Sun Microsystems, Inc. These companies and others like them have created new jobs usually paying higher wages than the average...They develop leading technology through innovation and spend substantial sums on research and development." -Brody, June 5, 1996	"We are seeing technological advances and innovations that are unprecedented. For example, the introduction of new electronic markets now extend trading hours of on-line trading." -Sarbanes, Sept. 28, 1999
Negative	"The U.S. share of technology markets is eroding at an alarming rate. In 1980, we had 90 percent of the domestic color TV market, we now have 10 percent. We had 100 percent of the machine tool market, we now have less than 30 percent." -Bryan, Oct. 26, 1989	No such speeches during this period	No such speeches during this period
Mixed	"…whether we like it or whether we don't like it, the computer is here to stay." -Gramm, May 24, 1988	No such speeches during this period	"The advent of new electronic trading systems has caused us some concern about increasing market fragmentation. These new electronic trading systems are…positive developments; they are a result of the technology revolution..." -Komansky, Feb. 29, 2000
Neutral	"We live in an increasingly information-intensive computerized age. Everything seems to happen faster than it used to." -Dixon, Feb. 2, 1988	New electronic filing system -Breeden, April 17, 1992	Question about electronic exchanges -Bennett, April 13, 2000

In 1996, two "Technological Growth" narratives emerged. This narrative views U.S. tech companies as now competing rather well with foreign rivals, aided by low taxes and venture capitalists but still impeded by overly strict regulations passed by Congress.

Lastly, a "Technological Dominance" narrative emerged in 1999 and was present 35 times in 1999 and 2000. Similar to previous pillars, this narrative portrays U.S. tech firms as revolutionizing the way business is done. Tech start-ups, venture capital, and free global markets are viewed as the key enablers under this narrative, while over-reaching regulations and the uncertainty of future changes being key impediments.

Step four also revealed 18 U.S. stock narratives[26]. Narratives negative in tonality were particularly common in the years 1987, 1988, 1989, and 1994. A narrative of "Stock Turbulence," which was present 59 times, all the in years 1987 and 1988, is particularly negative and sees the U.S. markets as in the midst of a dramatic financial meltdown due to factors such as investor irrationality, program trading, and the federal deficit. Only strict regulations, expanded SEC power, tougher margin requirements, circuit breakers, and a balanced federal budget would ensure such a meltdown did not happen again.

Present 13 times in 1989, a narrative of "Stock Volatility" notes that while the crash had passed, stocks remain extremely volatile and unpredictable, largely due to computer-driven program trading, leverage, and speculation. Increased regulation and computer capacity for exchanges are viewed as the two key enablers to prevent such volatility.

Similar to "Shaken Economy," a "Shaken Stocks" narrative, present 11 times in 1987, warns that investors are losing trust in the stock market, which was increasingly viewed as a rigged market where only insiders can profit. This rigged market is further impeded by a wave of very complex mergers and can only be saved by greater surveillance, tougher penalties, and prosecution of criminal behavior.

As present in the previous pillar, a "Stock Decline" narrative, which was present only one time in the year 1990, sees stocks as declining in value due to tougher foreign competition (particularly the Japanese) and growing federal deficits, while long-term planning and better educational outcomes in math and science are viewed as key enabling factors.

[26] In this pillar, senators and witnesses often used the word "securities" instead of "stock" or "stocks." In most cases, these speakers were referring to stocks or options sold on the major U.S. exchanges, but they were also sometimes referring to U.S. bonds, both government and corporate. Due to the high degree of overlap in these speeches, I coded any speech that referred to both stocks and bonds using the word "securities" as a stock narrative and coded any speech that referred exclusively to U.S. bonds as N/A for a stock narrative. This latter coding was extremely rare, with only a handful of occurrences.

A narrative of "Stock Abuse," present seven times in the year 1994, notes that while the economy is relatively healthy, instances of stock manipulation and abuse are still widespread, most notably in mutual-to-stock conversions. Greed and lax regulations are seen as the primary culprits for these abuses.

A "Stock Uncertainty" narrative, which occurred twice in the year 2000, was very uncertain over the near future of stock markets, stressing that while technological advancements and greater investor participation were driving stocks up, the rapid pace of change and higher interest rates made the future quite unpredictable.

Similar to an "Economic Competitiveness" narrative, a "Stock Competitiveness" narrative, present only one time in the year 1996, stresses that U.S. exchanges are falling behind foreign exchanges due to out-dated, burdensome regulations.

Somewhat less negative, the narratives of "Unfair Stocks" and "Stock Risk," both present once in 1987, were very similar to their economic counterparts. A narrative of "Stock Myopia" became common in the year 1990 and was present four times in that year. This narrative sees U.S. investors as overly focused on the next quarter, while Japanese investors were much more patient, allowing Japanese corporations the time to better plan for the future.

The only neutral narrative in this group was, again, a narrative of "Stock Cycles." This narrative was present one time in the year 1994 and notes that markets are composed of recessions and recoveries and bull and bear markets. As a consequence, overly strict regulations during upturns can pose huge threats to corporate expansion during inevitable downturns.

Similar to an "Economic Expansion" narrative, a "Stock Expansion" narrative was present early on, appearing 12 times in the year 1987. This narrative argues that U.S. exchanges and participants in U.S. securities markets need to be deregulated to keep up with foreign rivals, most notably the Europeans. Out-dated regulations such as Glass-Steagall are seen as burdensome, while deregulation is still noted as risky and thus requires appropriate safeguards and diversification measures.

After the upheaval caused by the 1987 crash, speakers eventually observed a recovery in stock exchanges. A narrative of "Stock Recovery" thus emerged, and was present four times in the year 1988. Expounders of this narrative stress that markets are actually quite healthy and that any overreaction by Congress, such as by imposing overly strict margin requirements or additional regulatory requirements, would only serve to frighten off returning investors and send stocks back into the doldrums.

Somewhat similar, a narrative of "Sound Stocks" stresses that U.S. markets are rather stable and still admired by the rest of the world. Piecemeal reforms, rash policies, and excessive deregulation are warned against, while carefully crafted, prudent policies and comprehensive reform are advised. A "Sound Stocks" narrative was present five times, all before 1993.

The remaining four narratives were all very positive and were all mostly present in the years 1996, 1999, and 2000. A narrative of "Stock Growth," present seven times, lauds U.S. exchanges for the recent growth and vitality. Wall Street, great business minds, self-regulation, and venture capitalists are seen as the key enablers of such growth. On the other hand, Congress and its excessive red tape are noted as a key impediment to future success.

A narrative of "Preeminent Stocks," appearing 12 times, sees U.S. markets as the undisputable envy of the world. Tech companies, venture capital, mutual fund growth, and low taxes are viewed as key enablers, while out-dated SEC regulations are highlighted as key impediments.

The final two narratives of "Stock Transformation" and "Soaring Stocks" were both extremely positive and optimistic and both noted that stock exchanges were now operating in a new economy driven by information technology.

A "Stock Transformation" narrative, appearing 17 times, all in the years 1999 and 2000, sees huge efficiency gains as occurring in U.S. markets. These gains are achieved by technological advances, derivative products such as options and futures contracts, privatization, and the increased presence of retail investors. However, such a narrative warns that fear of change, market fragmentation, and regulatory arbitrage could prevent the U.S. from reaping extra gains from such a transformation.

A "Soaring Stocks" narrative, which was present four times in 1987 (before the crash) and 17 times in 1999 and 2000, took the euphoria a step further. This narrative, as present in previous pillars, focuses on the explosive growth in stock markets of late. Tech companies are seen as the primary enablers of such growth, but also factors such as increased competition, deregulation, and mutual fund growth are included. Key impediments to these soaring values include international competitors, excess investment fees, and out-dated regulations.

Tables and figures for the tech company narratives and U.S. stock narratives are available on the following eight pages.

Table 8.4 Tech company narratives (sampled Senate statements, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Technological Decline	• Decline • Inferior to foreign competitors	• Past U.S. dominance • Globalization • Recent slump	• Innovation • R&D • Good policies • Education • Long-term planning	• Foreign competitors • Predatory behavior of Japanese firms • Trade barriers • Inaction at Congress	"For example, the U.S. semiconductor capital equipment, semiconductor, and computer industries are already in grave trouble, and are likely to suffer fatal damage over the next several years." -Ferguson, Sept. 14, 1990
Technological Growth	• Growth	• Growing, healthy U.S. economy	• Venture capital • Start-ups • Prudent policies • Low taxes • Greater savings	• Burdensome regulation	"It is my hope that these changes will encourage greater investment in companies and technologies like those which have emerged from the national labs in my home State. Start-up, high-tech companies create jobs and allow us to compete in a growing global economy, and I hope that this new law will assist in the creation of the next Intel or Microsoft. -Domenici, June 5, 1996
Technological Dominance	• Dominance • Revolution	• Strong economy and stock markets • Unprecedented technological advances • “New economy” • Globalization	• IT companies • Start-ups • Venture capital • Free markets	• Over-reaching regulations • Competitive change • Global competition	"Let me begin by saying that the whirlwind of change driven by technology and globalization is dramatically changing the landscape of our markets, and how both individuals and institutions buy and sell securities." -Paulson, Feb. 29, 2000

Figure 8.8 Tech company narratives (by count), sampled Senate statements, 1987–2000

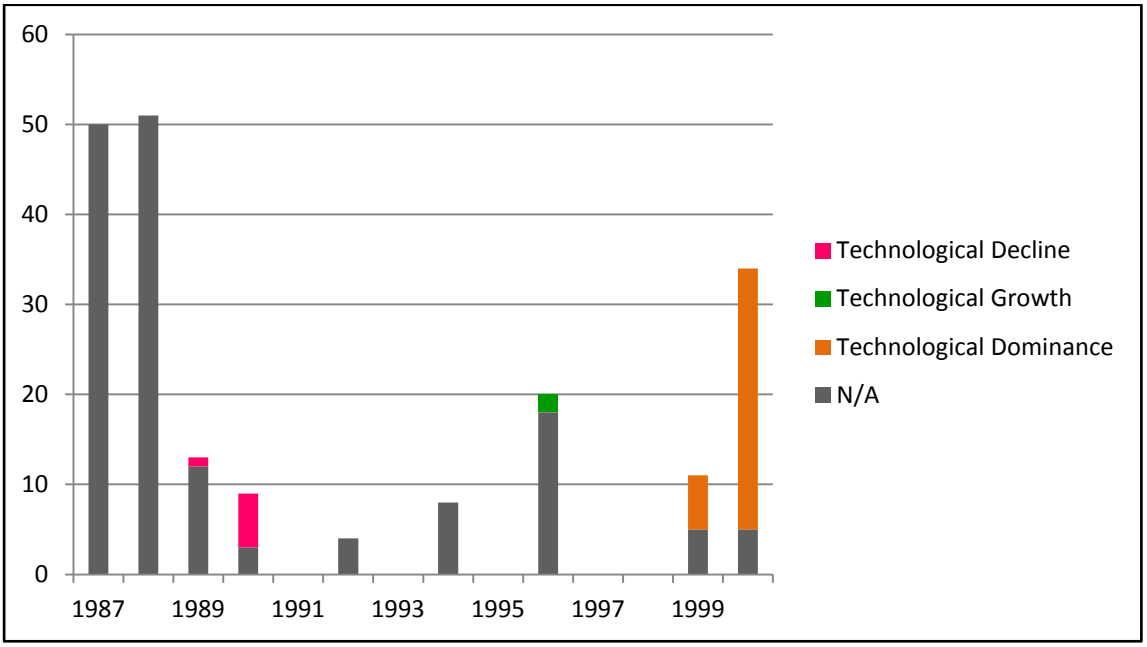
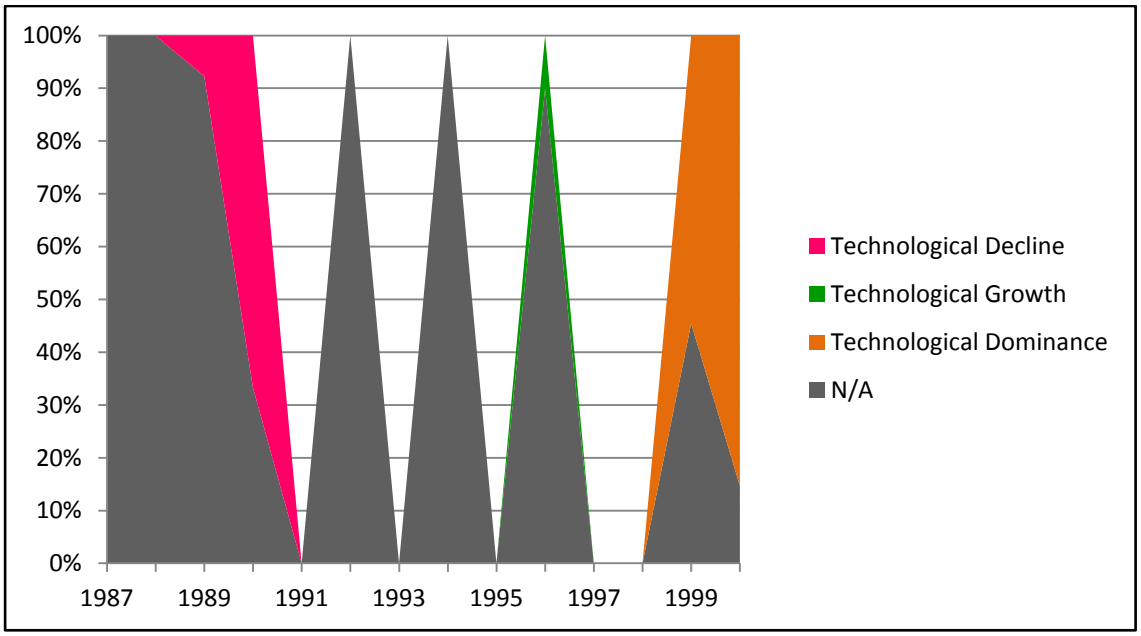


Figure 8.9 Tech company narratives (by percentage), sampled Senate statements, 1987–2000



Notes: Each of the 200 items sampled was categorized according to one, and only one, of the three narratives, except for 156 items that did not possess a full narrative and were coded as N/A.

Table 8.5 U.S. stock narratives (sampled Senate statements, 1987–2000)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Turbulence	• Turbulence • Meltdown • Crash	• Recent 500 point crash in Dow • Historically strong markets • Recent scandals	• Margin requirements • Strict regulations • SEC power • Balanced budgets • Circuit breakers	• Irrationality/greed • Technology • Federal deficit • Poor policy • Derivatives	"But looking for a cause based on the fundamentals is bound to be insufficient. For such explanations try to account for an irrational occurrence in rational terms. The stock market crash was the product of excesses, not sober calculation." -Proxmire, Nov. 4, 1987
Stock Volatility	• Volatility	• Recent crash and turbulence • U.S. with strong, liquid markets	• Regulators/oversight • Computer capacity	• Program trading • Foreign competition • Leverage/speculation • Deficits	"But the markets need to be a stable bridge that links corporations in need of capital with investors…Frankly, I am worried that what Wall Street has constructed still looks more like a roller coaster than a stable bridge." -Heinz, Oct. 26, 1989
Shaken Stocks	• Losing confidence and trust • Insider game	• Wall Street scandals • Historically strong markets	• SEC power • Lawyers • Computers/technology • Penalties	• Greed/lack of ethics • Complexity • Investment bankers • “Merger mania”	"Increasingly, there is a perception that the markets are rigged and unfair." -Dodd, April 22, 1987
Stock Decline	• Decline	• Global markets • Increased competition	• Higher savings • Longer planning horizons • Education	• Deficits • Regulatory barriers • Foreign competition	"… concerns that have been expressed by many responsible Americans about the declining competitive state of our country's industrial, technological, and financial base." -Riegle, Sept. 14, 1990

Table 8.5 U.S. stock narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Abuse	• Abuse • Manipulation	• Abuse in mutual-to-stock conversions • Relatively healthy U.S. economy	• Prompt regulatory response • Process reform • Tougher standards	• Greed • Lax regulations	"But we believe that this year's gold model for chutzpah and greed perhaps ought to be awarded to the current gang of conversion artists at work on the Nation's mutual savings institutions." -Lewis, Feb. 25, 1994
Stock Uncertainty	• Uncertainty	• Recent losses in stock markets • Information age	• Productivity • Technological advancements • New investors	• Raising interest rates • Rapid pace of change	"…if these losses will affect the Fed's monetary policies…I am concerned that the Fed's economic models are truly not up to date. I do not believe they factor in the huge worker productivity we have experienced." -Bunning, April 13, 2000
Stock Competitiveness	• Staying competitive with foreign competition • More efficient	• Global marketplace	• Prudent policies • Improving efficiency	• Out-dated, burdensome regulations	"…it could be even a better bill and it could make our markets more efficient and more competitive in what is an increasingly global capital marketplace." -Saltzman, June 5, 1996
Unfair Stocks	• Investment only for the wealthy	• Increased concentration of asset holdings	• Fair laws	• Fees on poorer households • Income inequality	"Asset holdings in the United States are very concentrated, more highly concentrated than family income, according to studies conducted by the Federal Reserve Board." -Fox, Aug. 6, 1987

Table 8.5 U.S. stock narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Risk	• Risk, risky changes	• Increased deregulation and international competition	• Prudent policies	• Excessive linkages between banks and corporations • Collusion amongst big banks	"…we should not create enormous monolithic financial organizations that could wield collusive and anticompetitive economic power and have a detrimental impact on the domestic market…" -Sasser, Oct. 13, 1987
Stock Myopia	• Myopia • Overly focused on near future/next quarter	• Global markets • Past U.S. strength • Increased competition	• Shareholder rights • Long-term planning • R&D • Patient capital	• Institutional investors • Budget crisis • Low savings	"The Japanese have given new definition to the term, patient capital. Some Japanese managers are basing their strategies on time horizons that stretch out over many decades." -Schacht, Sept. 14, 1990
Stock Cycles	• Cycles • Recessions and recoveries	• Recent downturn	• Well-functioning capital markets • Confidence • Prudent policies	• Overly strict regulations	"But the issue is this kind of legislation may look attractive in the background of what has happened in the last year and a half, but could be very unattractive at a time when capital is difficult to raise and when there might be broad needs for capital to be raised." -Carson, Feb. 25, 1994
Stock Expansion	• Expansion	• Difficulty competing with foreign banks • Changing financial markets	• Deregulation • Competition • Safeguards • Liquidity • Securitization	• Foreign competition • Red tape • Burdensome regulation • Risks	"…allowing bank holding companies to increase their participation in the securities market will ultimately benefit the consumer." -Karnes, Aug. 6, 1987

Table 8.5 U.S. stock narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Recovery	• Recovery • Rebound	• Recovery of stocks from 1987 crash	• Prudent policy • Mutual fund growth • Pension growth • Congressional/U.S. government action	• Overreaction by Congress	"There are monthly numbers on initial public offerings which are revealing which show a substantial recovery since late October." -Gould, May 24, 1988
Sound Stocks	• (Return to) Stability	• Healthy banking sector • Calls for deregulation	• Healthy banks • Efficiency • Prudent policies • Comprehensive reform	• Deregulation • Conflicts of interest • Piecemeal reform • Rash policies	"Our markets are the safest, soundest and most efficient in the world. It would be a shame to take unwarranted actions to shake investor confidence at this time." -D'Amato, March 31, 1988
Stock Growth	• Vitality • Great confidence • Large trading volume	• High U.S. working/living conditions • Wall Street scandals	• Wall Street • Great business minds • Self-regulation • Venture capital • Mutual fund growth	• Congress/red tape • Greed/fraud • “Lack of scruples” • Tax burdens	"…as financial planning continues to grow rapidly as a vital service to American families and small businesses, it is important to maintain uniform regulation on the State level." -Wechsler, June 5, 1996
Preeminent Stocks	• Envy of the world • Greatest capital markets	• Solid economic growth • Record IPO offerings • Globalization	• Technology • Venture capital • Prudent policy • Investor confidence • Foreign investment	• Out-dated SEC regulations • Fraud	"Furthermore, the American capital markets are the envy of the world and we shouldn't allow that to change. No other nation enjoys the international reputation of our capital markets..." -Dodd, June 5, 1996

Table 8.5 U.S. stock narratives (sampled Senate statements, 1987–2000) (continued)

Narrative	Object	Destinator	Key enabling forces	Key impeding forces	Selected quotations
Stock Transformation	• Transformation of markets • Huge efficiency gains	• Information age • New economy • Strong economic performance • Electronic markets	• Technological advances • Privatization • Derivatives • Integrity • SEC oversight • Retail investors	• Fear of change • Burdensome regulation • Market fragmentation • Conflicts of interest • Excess fees	"…the announced plans by the New York Stock Exchange and The Nasdaq Stock Market to demutualize—which are the result of, among other things, innovations in technology. For over 200 years, the New York Stock Exchange has been an icon which has provided this Nation with a combination of a source of liquidity to which businesses can turn to get the resources they need to create jobs and grow, a place for Americans to invest with confidence, and a brand name which provides listed companies with a financial 'Good Housekeeping' seal of approval." -Grams, Sept. 28, 1999
Soaring Stocks	• Stock boom • Extraordinary rise • Explosive growth	• New economy • Information age • Technological change • Strong, growing markets • Global investment environment	• Tech companies • Mutual fund growth • Competition/free markets • International investment • Deregulation	• Excess investment fees • International competition • Out-dated regulations	"It is clear that the information age, which we are only on the edge of, is going to dramatically alter the way we sell equities in America. Because the value of equities is primarily related to knowledge, when people can have massive amounts of knowledge at almost zero cost, that is bound to have a profound impact on the equity markets of America and the world." -Gramm, Sept. 28, 1999

Figure 8.10 U.S. stock narratives (by count), sampled Senate statements, 1987–2000

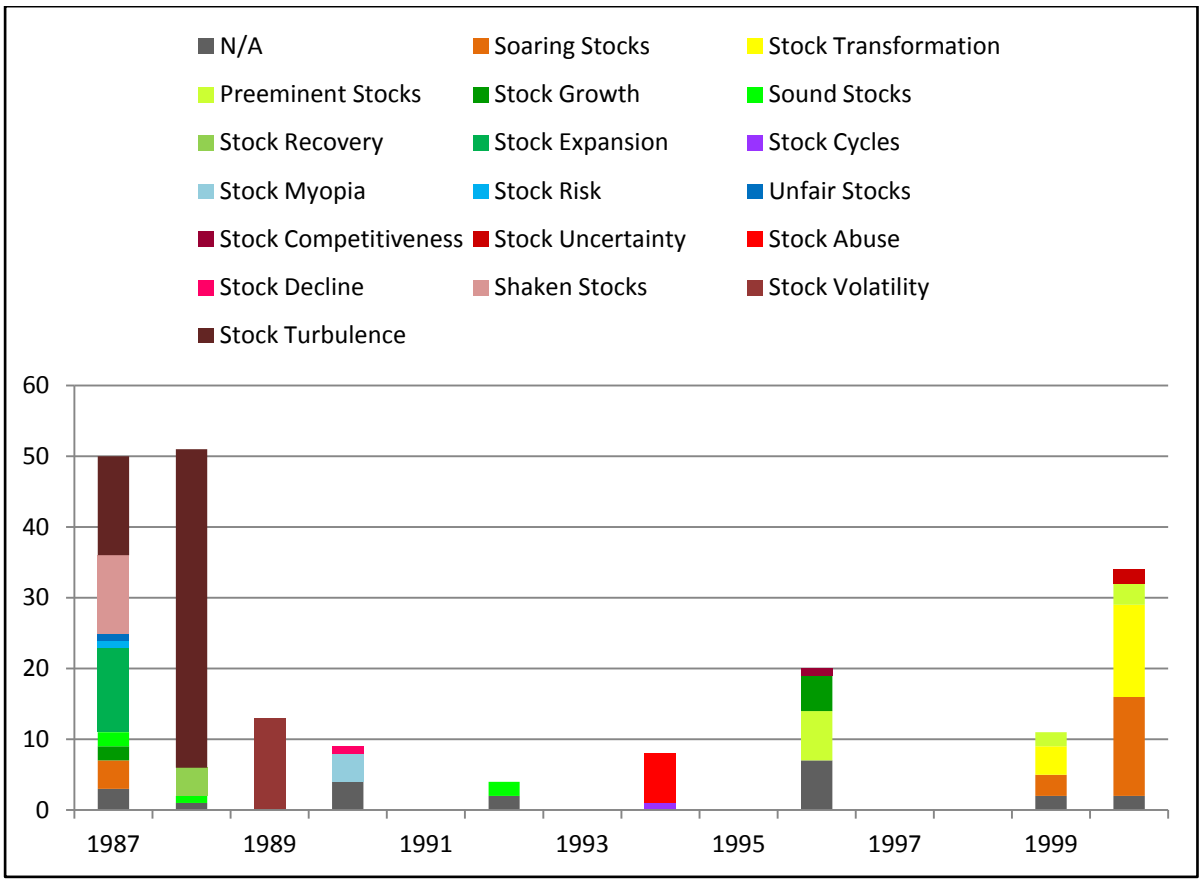
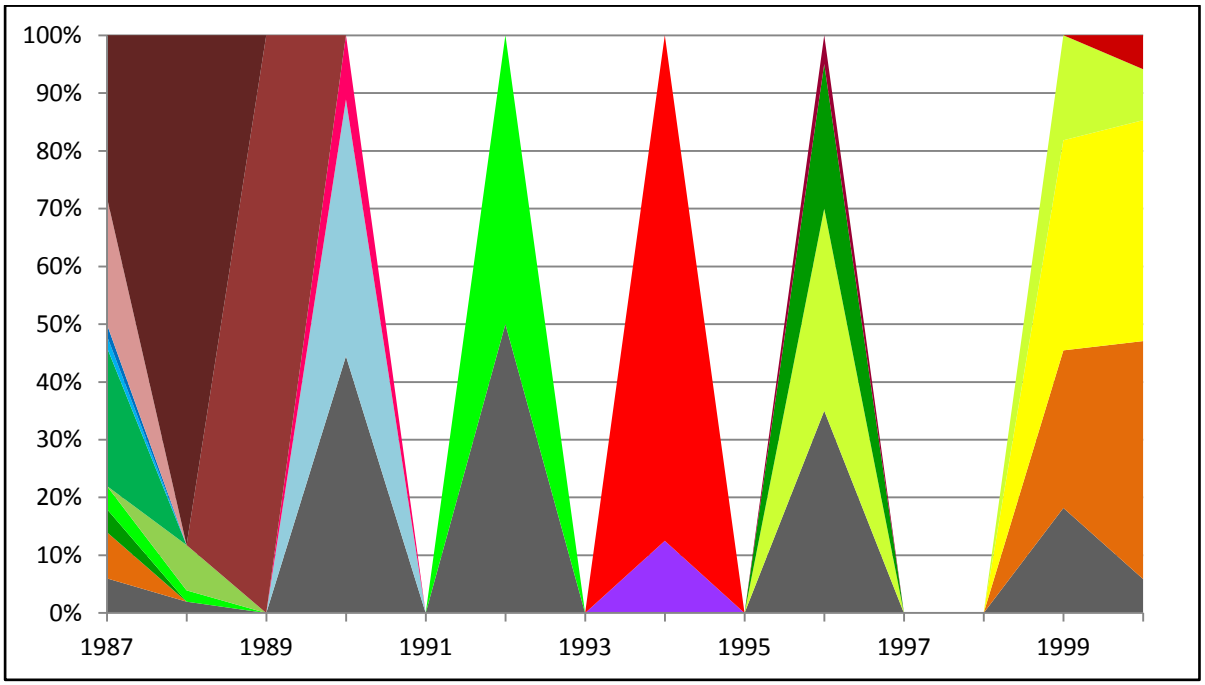


Figure 8.11 U.S. stock narratives (by %), sampled Senate statements, 1987–2000



Note: The legend in Figure 8.10 also applies to Figure 8.11.

8.2 Institutional features

In the regulative pillar, the fourth stage of analysis unveiled five interrelated means by which boom narratives were institutionalized and two reasons why efforts to deinstitutionalize boom narratives ultimately failed.

Four of the five means of institutionalization were similar to those found in previous pillars, which were 1) the spread and repetition of boom narratives, 2) the transition of a boom narrative to destinator, 3) the opinions of experts, and 4) using unequivocal language. A new, fifth mean of institutionalization in this pillar was the practice of 5) market idolatry. These five categories are explained in detail below.

8.2.1 The spread and repetition of boom narratives

As exemplified in the previous section, particularly after 1996, a large variety of boom narratives emerged and spread at the U.S. Senate Committee on Banking, Housing, and Urban Affairs. First, looking at the U.S. economy narratives that emerged, narratives of "Economic Revival," "Explosive Growth," "Economic Leadership," "Structural Shift," and "New Economy" would all imply that investments in the U.S. economy would deliver significant returns for the foreseeable future, thus constituting boom narratives.

From 1987 to 1996, these narratives were present in only six of the 155 statements, or less than four percent. All six of these instances were narratives of "Economic Revival" after the 1987 crash. However, in the years 1999 and 2000, the 45 statements consisted of 36 boom narratives, which is exactly 80 percent (with five of the remaining nine statements possessing no economic narrative at all).

At the asset level, the tech narrative of "Technological Dominance" constitutes a boom narrative. This narrative was not present a single time before 1999. Then, in the years 1999 and 2000, it was present in 35 of the 45 statements, or nearly 78 percent. Concerning the U.S. stock markets, narratives of "Preeminent Stocks," "Stock Transformation," and "Soaring Stocks" would all qualify as boom narratives. Before 1996, these narratives were only present four times, all in the lead up to the 1987 crash. Then, from 1996 to 2000, these narratives were present 46 times in 65 statements, or nearly 71 percent.

Thus, overall, statements made at these U.S. Senate hearings underwent a dramatic shift from 1987 to 2000. This shift from pessimism and skepticism to overwhelming optimism appeared at the highest level of U.S. government and at the very committee in charge of overseeing the country's financial markets and banking system. As a result, such discourse acquired widespread legitimacy and became a taken-for-granted portrayal of the country's investment environment.

The data from this pillar also demonstrated rather vividly just how rapidly certain narratives and even language can spread amongst a well connected community. This phenomenon is best illustrated by the notion that the U.S. possessed the world's "preeminent" stock markets. As explained above, from 1987 to 1994, many of the statements and narratives in this pillar were rather negative regarding the U.S. stock exchanges and U.S. companies. Circa 1996, however, most statements became rather positive. This included the claim that the United States now (once again) possessed the world's preeminent markets, as stated by Senator Alfonse D'Amato on June 5, 1996:

> The Securities Investment Promotion Act of 1996 is a significant piece of legislation that will ensure that the U.S. securities market remains the preeminent securities market in the world.

The phrase "preeminent markets" or "market preeminence" then appeared numerous times in the sample, by a range of different speakers, including Senator Paul Sarbanes, Senator Chris Dodd, Richard Grasso (CEO of the NYSE), Henry Paulson (CEO of Goldman Sachs & Company), Philip Purcell (CEO of Morgan Stanley Dean Witter & Company), Allen Wheat (CEO of Credit Suisse First Boston), and Alan Greenspan (Chairman of the Federal Reserve). Below, I provide a select sample of seven such statements from these individuals (all emphases are added).

> Of course, we retain *our preeminent position in the world* in this regard. As a matter of fact, the Wall Street Journal reported not too long ago that German venture capitalists plan to take the German companies public on the U.S. market. (Sarbanes, June 5, 1996)

> It is vital to our economy that *U.S. equity markets remain preeminent in the world*. (Dodd, Sept. 28, 1999)

> I look forward to working with the Committee and the Commission to ensure *America maintains its preeminent role in global capital markets*. (Grasso, Feb. 29, 2000)

> We look forward to working with you and with those who directly regulate us to keep *American markets the preeminent capital markets in the world*. (Paulson, Feb. 29, 2000)

> …the time has come for us to reevaluate critically our major markets, the overall market structure and the regulatory structure to ensure that the *U.S. maintains its global preeminence* by offering investors the fairest and most technologically advanced, competitive and efficient markets—markets that are adaptable to changes spurred by the new economy. (Purcell, Feb. 29, 2000)

> If the *U.S. is to retain its role as the preeminent world equities market*, then it will need to embrace and master the new trading technology. (Wheat, Feb. 29, 2000)

> Participants in our equity markets have succeeded in concentrating a great depth of liquidity that is the envy of other nations and a symbol of the *United States as the world's preeminent financial power*. (Greenspan, April 13, 2000)

The widespread agreement in these years that the U.S. possessed the world's greatest financial markets worked towards further institutionalizing the idea that stocks were a great investment, particularly "new economy" stocks.

8.2.2 Boom narrative destinator

Similar to the previous two pillars, in the regulative pillar the theme of technology transitioned from being viewed in a negative and impeding manner, to being almost entirely ignored, to eventually being viewed as the underlying force and context by which a "new economy" was emerging and stock values were soaring.

As discussed earlier in this chapter, at the beginning of the sample period, connotations of technology were initially mixed. While a few positive statements highlighted the technological progress of some U.S. companies and industries and the exchanges, statements became increasingly negative, particularly in the years 1989 and 1990. This negative transition was primarily due to two factors: 1) the (perceived) dangers of new, computer-driven program trading, and 2) the U.S. losing market share in high-tech industries to both Japan and Europe.

Program trading, which is the simultaneous purchase and sale of a large number of stocks and futures contracts with the use of a computer program, was identified soon after the 1987 crash as one of the primary culprits of the calamity. In short, program trading was blamed for the excessive volatility because it allowed extremely large blocks of stocks to be traded almost instantaneously and thus allowed for increased speculation and arbitrage opportunities. The following quotes from Senators John Heinz, Richard Shelby, and Bob Graham exemplify this concern:

> What happened was an intersection of technology with new products—the technology being such things as direct order transfer program trading, the new products being the stock index futures contracts traded on the Chicago Mercantile—and we saw extensive volatility. (Heinz, Nov. 4, 1987)

> Computers trade large blocks of stock in seconds. The New York Stock Exchange pulled the plug on program trading; many of my constituents would like the computers unplugged for good. (Shelby, Nov. 4, 1987)

> Technology has allowed us to convert a capital's market into a daily, 24-hour, worldwide casino. (Graham, Nov. 4, 1987)

At this time, many, but not all, Senators worried that program trading and other related technological advances on the exchanges were creating a rigged, casino atmosphere that was scaring away the everyday retail investor, whose confidence was critical to the future of both the U.S. exchanges and the U.S. economy. Such fear was most poignantly described by Senator Alfonse D'Amato:

> I was away on vacation. My gosh, I was harassed by this little old lady at the most inopportune time. She said, are you who I think you are, and was grabbing my arm, and I was trying to do something else with my arm. And she kept saying, you have to stop it, you have to stop it. You have to stop that program trading; it is a terrible thing. And all night she harassed me. The next morning, believe it or not, I was out to take this taxicab and, my God, the same little old lady appeared. And she said, you better stop it, that program trading. (D'Amato, Feb. 2, 1988)

In the early 1990s, while the concern over program trading faded, concern for U.S. tech industries was paramount, with numerous senators and experts warning that the U.S. was already significantly lagging Japan and Europe in both emerging technologies and basic research and development. Senator Donald Riegle and Donald Petersen (Chairman Emeritus of Ford Motor Co.) were two speakers with such concerns:

> This past spring, the Commerce Department released a report noting the United States was losing leadership in the electronic industry. It attributed this to the fact that other countries such as Japan had coordinated national policies to strengthen this industry, while we did not. In another report identifying 12 important emerging technologies, the Commerce Department warned that current trends would soon leave us lagging behind Japan in all 12. (Riegle, Sept. 14, 1990)

> Many foreign competitors have been aggressively building up their research and development infrastructure over the past two decades while U.S. federal funding for university research plants and facilities has declined by 95 percent in real terms. (Petersen, Sept. 14, 1990)

Such concern was voiced most starkly by witness Charles Ferguson, a consultant to U.S. high-tech companies and investors:

> …which make it increasingly clear that the United States is simply unprepared for the advent of the information age. If the United States continues on its present course, it would be no exaggeration to say that over the next twenty years, the U.S. will come to resemble an underdeveloped country such as Argentina more than it will resemble the most advanced economies in the world as exemplified by Japan, Germany, Singapore, and other nations. (Ferguson, Sept. 14, 1990)

Interestingly, despite these grave concerns in 1990, the theme of technology was largely ignored in the sample until the year 1999. In a rare mention in the year 1996, though, a key shift occurred. In a speech by A.B. Krongard (Chairman of the Securities Industry Association and future Executive Director of the Central Intelligence Agency (CIA)), Krongard argues that technology is now the "driving force" behind U.S. growth and the strength of U.S. markets:

> Technology is the driving force of change and opportunity in the securities industry. Computers, modems, and sophisticated telecommunications systems have created previously unimaginable efficiencies and opportunities in the markets…Technology has helped our industry improve efficiency, handle increased volume, provide new products and services, and expand information gathering and storage capabilities. It has also greatly increased the choices for the financial services consumer. (Krongard, June 5, 1996)

By 1999, numerous speakers observed that a technological revolution was underway, with the U.S. leading, and this revolution became the context in which a new economy and soaring stock values were possible. The following quotes by Senator Phil Gramm, Leopold Korins (CEO of the Securities Traders Association), Charles Schwab (Chairman of Charles Schwab and Company), and Allen Wheat reveal this markedly new and exciting portrayal of technology in the U.S.:

> It is clear that the information age, which we are only on the edge of, is going to dramatically alter the way we sell equities in America. Because the value of equities is primarily related to knowledge, when people can have massive amounts of knowledge at almost zero cost, that is bound to have a profound impact on the equity markets of America and the world. (Gramm, Sept. 28, 1999)

> Therefore, the fees deter capital from flowing to the entrepreneurial, high technology companies that have driven the new economy and the largest expansion in U.S. history. (Korins, Feb. 28, 2000)

> But technology is the great equalizer, and we saw an interesting thing happen with the growth and success of the Internet. Technology suddenly made the markets accessible to the average investor and gave them the tools they need to compete in the market. (Schwab, Feb. 29, 2000)

> The U.S. is the center of the technological revolution that is a driving force behind many of these market changes. (Wheat, Feb. 29, 2000)

Hence, by the years 1999 and 2000, technology had completed a dramatic shift from being a dangerous and gloomy topic to being the very impetus for the U.S.'s economic resurgence. Serving now as the context by which the economy and stock values were evaluated, the U.S.'s technological dominance became a taken-for-granted, institutionalized context by which investors would now make decisions.

8.2.3 Expert opinion

Similar to the previous two pillars, speakers in this pillar often referred to experts to support their claims. References to major news outlets such as *The New York Times*, *Fortune*, *Forbes*, *The Wall Street Journal*, *The Economist*, and *The Washington Post* were common, particularly earlier on in the sample.

References to economists, professors, market regulators, and various government reports were also common, but much less so than media quotes. However, in contrast to previous pillars, these references played a minor role, and almost disappeared altogether, during the boom years of 1996 to 2000.

Where expert opinion did come to play a major role in this pillar was in the testimony of numerous expert witnesses, who are called upon by this committee to testify over matters of Senate debate, such as new legislation or important economic or banking events and reforms.

In this regard, these witnesses have enormous power over discourse at the Senate, as they are viewed as market insiders who can help the Senate to better understand key issues and legislate effectively—and thus avoid unintended consequences of new policies.

As seen in Table 8.6 on the next page, of the 79 witnesses in this sample, the majority came from the four groups of banking and securities (34 percent of the witnesses), SEC/CFTC (17 percent), stock exchanges (12 percent), and other government, which included representatives of various states, cities, agencies, and task forces (11 percent).

Outside of these groups and Alan Greenspan's five appearances, other witnesses such as lawyers, professors, and consumer advocates received very few opportunities.

Table 8.6 Witness count by group (sampled Senate statements, 1987–2000)

Group	Count	Group	Count
Banking/securities	27	Legal	2
SEC/CFTC	14	Academic	2
Stock exchanges	10	Consumer groups	2
Other government	9	Real estate	2
Federal Reserve	5	Tech industry	2
Other private industry	3	Church affiliation	1

As already shown in this chapter, statements by all speakers became increasingly positive in the late 1990s. In the years 1999 and 2000, when boom narratives flourished, expert witnesses accounted for 27 of the 45 statements, or 60 percent.

As such, the boom narratives expounded during these years acquired even greater legitimacy, for these experts had a very powerful microphone and a very important audience—that being the U.S. Senate and the political media in the room. Such power gave these experts the ability to influence both federal legislation and public opinion.

Examples of boom narratives and extremely positive discourse provided by these experts are numerous, as exemplified in Table 8.7 on the next page. Below, I provide a short excerpt from a speech by Bradley Skolnik, President of the North American Securities Administrators, Inc. In this excerpt, Mr. Skolnik lauds the explosive growth in stock markets, just weeks after the NASDAQ suffered a 10 percent drop and a few months before the exchange would begin its 80 percent freefall:

> Tens of millions of Main Street investors—the numbers are growing every week—are investing their hard-earned savings and pensions in the markets. (Skolnik, May 8, 2000)

8.2.4 Unequivocal language

As seen in the cognitive pillar, the use of unequivocal language was also prevalent at the U.S. Senate. Such language was particularly prevalent during the boom years of 1996 to 2000. Consequently, the boom narratives that circulated during these years exuded great confidence and certainty. As such language was pervasive at the U.S. Senate, this confidence was then institutionalized as it became common discourse during the late 1990s.

Table 8.7 Examples of expert opinion (sampled Senate statements, 1987–2000)

Narrative	Expert	Selected quotation
Technological Dominance	Philip Purcell, CEO, Morgan Stanley Dean Witter & Co.	"The record trading volumes the U.S. markets have been experiencing reflect the quality and variety of financial services in this country and the ever-evolving technology used to deliver these services." -Purcell, Feb. 29, 2000
New Economy	Charles Schwab, Chairman, Charles Schwab & Co.	"To some it's market fragmentation. I prefer to call it market democracy. It's a new democracy that's furiously creating fresh opportunities for investors and entrepreneurs." -Schwab, Feb. 29, 2000
Economic Leadership	Robert Seijas, Executive Vice President, Fleet Specialists	"Our specialists are at the heart of the auction market of the world's most active stock exchange." -Seijas, Feb. 28, 2000
Explosive Growth	Keith Helsby, Senior Vice President, NYSE	"Specifically, market activity has greatly increased to a level unforeseen in 1996...At the end of 1996, the Dow Jones Industrial Average was 6,448. At the end of 1999, the Dow was 11,497. This represents an increase of 78%." -Helsby, Feb. 28, 2000
Preeminent Stocks	Frank Zarb, CEO, National Association of Securities Dealers, Inc.	"One thing that we both feel very strongly about is the need to keep the United States of America's capital markets the center of the universe with respect to global financial exchanges." -Zarb, Sept. 28, 1999
Stock Transformation	Arthur Levitt, Chairman, SEC	"At this critical point in the evolution of our markets, I remain solidly optimistic about the future." -Levitt, Feb. 29, 2000

As can be seen in Section 8.2.1, this language is easily exemplified in narratives that saw the U.S. as possessing the world's "preeminent" markets. From 1996 to 2000, numerous speeches included similar rhetoric, leaving little doubt that—despite the crash, volatility, abuse, manipulation, fraud, and uncertainty prevalent in the late 1980s and early 1990s—the U.S. once again possessed the world's safest and greatest financial markets (all emphases are added):

> The U.S. financial markets continue to be the *best in the world*, due in no small part to the regulatory system which makes them the *safest in the world*. (Harris, June 5, 1996)

> …the United States continues to maintain its reputation as having the *highest quality securities markets in the world*, the one which *best protects investors*. (Sarbanes, Sept. 28, 1999)

> Our markets are the *most efficient and the most trusted*. We have to maintain both. (Schumer, Sept. 28, 1999)

> For over two centuries the United States has boasted the *largest, most liquid and well regulated securities markets in the world*. (Purcell, Feb. 29, 2000)

> They [financial markets] are important to working Americans because half of all Americans own equities, either directly or indirectly, and because the fact that we have the *best capital market in the world* means we also have the *best working conditions and the highest living standards in the world*. (Grams, May 8, 2000)

While the European exchanges were occasionally praised for their technological improvements and widespread deregulation (almost always in statements urging further deregulation of the U.S. exchanges), such unequivocal praise for U.S. markets dominated discourse during these years. Table 8.8 on the following page provides further examples of how speakers used unequivocal language in their statements.

8.2.5 Market idolatry

The last means of institutionalization present in this pillar is somewhat similar to the use of unequivocal language but, in a sense, takes the assumed greatness of U.S. markets and exchanges even one step further. This last means is called market idolatry, which can be defined as the expression of immoderate praise and trust in the markets similar to that of a person worshipping a god or deity.

Table 8.8 Examples of unequivocal language (sampled Senate statements, 1987–2000)

Narrative	Selected quotation
Preeminent Stocks	"*I can only imagine that Americans today are more investment literate than at any time in history*, and some of the protections that might have been appropriate in an earlier era were felt by us to be too stringent…" -Levitt, June 5, 1996
Technological Dominance	"*Let there be no doubt*—technology has been our partner, not our adversary, making possible the explosive growth we have witnessed over the past 10 years and presenting the exchange with the opportunity for further growth as the clock ticks out on the 20th century." -Grasso, Sept. 28, 1999
Soaring Stocks	"I don't think there has *ever been a better period in our history for investors*." -Schwab, Feb. 29, 2000
Stock Transformation	"*America is always the dominant country* in providing the markets that raise capital." -Gramm, Feb. 29, 2000

Note: all emphases are added

An initial expression of market idolatry can be seen in claims that the U.S. possessed the world's preeminent, safest, most efficient, and most liquid markets. In this vein, many speakers noted that U.S. markets were now the "envy of the world" as all other nations sought to emulate the design of U.S. exchanges and financial markets (all emphases are added):

> Furthermore, the American capital markets are the *envy of the world* and we shouldn't allow that to change. No other nation enjoys the international reputation of our capital markets… (Dodd, June 5, 1996)

> Due in part to rigorous oversight, U.S. markets have become the deepest, most liquid, and most fair. In short, they are the *envy of the world*. (Schumer, April 13, 2000)

> Our securities markets are the *envy of the world* because they are fair, transparent and well-regulated. (Skolnik, May 8, 2000)

While such discourse of world envy represents excessive praise and trust in markets, particularly just before their steep fall, other rhetoric at the U.S. Senate expressed an even stronger form of praise as speakers expounded a form of deep respect for and even reverence towards U.S. markets and exchanges. Such reverence is most explicitly voiced by Chairman of the Committee Senator Philip Gramm in the year 2000:

> I never come to Wall Street, I never come to the financial markets in New York City, that I don't [sic] become acutely aware that this is the nerve center of American capitalism. And knowing what capitalism has meant to America and the world, *to me this is a holy place*. (Gramm, Feb. 29, 2000, emphasis added)

Such idolatry was rather common in the late 1990s, as speakers often commented that the U.S. capital markets were the nation's "greatest asset" and that the major exchanges should be given their "proper respect." As a result, market regulators and executives, such as Alan Greenspan and the heads of the major exchanges, were seemingly omniscient and could do no wrong. Table 8.9 on the following page provides examples of such rhetoric.

This unadulterated respect and trust in the markets was rather surprising, especially considering how negative the rhetoric was in the late 1980s and early 1990s. For example, Philip Purcell's quote on the following page of a confidence from individual investors being "nurtured over many decades" contrasts sharply with that of Senator John Heinz in 1988:

> …small investors taking their cash, their savings, and investing it in the market, those people have said, "Hell, no, I'm not going to go. I'm going to keep my money someplace else," but the last place they are putting it is in the equities markets. (Heinz, May 24, 1988)

Speakers at the U.S. Senate expressing forms of market idolatry has very real and immediate regulative and legislative effects. That is to say, if the markets can do no wrong and if market executives know more than the regulators, then the best regulatory approach is a hands-off approach. Going one step further, legislators eventually argued that regulations should always add value to the markets, and never constrain them.

These sentiments are expressed in the following quotes from SEC Chairman Arthur Levitt and Banking Committee Chairman Philip Gramm:

> This truth defines our [SEC's] mandate: Ensuring that competitive forces continue to shape our marketplace so that the market's natural genius is permitted to fully unfold. (Levitt, Feb. 29, 2000)

Table 8.9 Examples of market idolatry (sampled Senate statements, 1987–2000)

Speaker	Selected quotation
Senator Bob Bennett	"Both of you [Richard Grasso and Frank Zarb, CEOs of the NYSE and NASDAQ, respectively] represent institutions that are *national treasures* and tremendous forces internationally. We talk about how things should be done in the future, we should remember that we are dealing with that kind of an asset here, and we should give it the *proper respect*." -Bennett, Sept. 28, 1999
Senator Philip Gramm (Committee Chair)	"*Our greatest economic asset is our capital markets*." -Gramm, Feb. 29, 2000 "Today, we are doing something that this Committee, that the Congress and the Nation often does, and that is call on the expertise of Chairman Greenspan. I guess it is obvious that Chairman Greenspan has become a *national asset*—and not just in doing his job at the Federal Reserve, but in being the *Nation's teacher and adviser* on these kinds of issues." -Gramm, April 13, 2000
Philip Purcell, CEO, Morgan Stanley Dean Witter & Co.	"Indeed, the increasing rate of individual investor participation in the equity markets, whether directly or through mutual and pension funds, indicates the confidence investors have in the integrity of our markets, *a confidence nurtured over many decades*." -Purcell, Feb. 29, 2000
Senator Rodney Grams	"*For over 200 years, the New York Stock Exchange has been an icon* which has provided this Nation with a combination of a source of liquidity to which businesses can turn to get the resources they need to create jobs and grow, a place for Americans to invest with confidence, and a brand name which provides listed companies with a financial 'Good Housekeeping' seal of approval." -Grams, Sept. 28, 1999

Note: all emphases are added

> Finally, with a competitive world market, where we could lose our preeminence in financial markets, it is imperative that we go back and look at every regulation and every law that governs our financial markets and that we then apply what I would call a value-enhancing test. That test is: does this regulation, does this law, add more value to our markets than it adds costs? (Gramm, Feb. 29, 2000)

The practice of market idolatry and the other four means of institutionalization explained in this chapter also partially explain the failure of efforts to deinstitutionalize the boom narratives of the late 1990s. In addition, this stage of analysis also revealed two specific reasons why boom narratives could not be deinstitutionalized: 1) an almost complete lack of texts attempting to challenge the boom narratives of the period, placing skeptical or negative texts in a very small minority, and 2) the few texts that were skeptical were mostly in reaction to initial market falls. These two reasons are explained in detail below.

8.2.6 Minority status

As noted at the beginning of this chapter, while texts from this pillar were rather negative in their tonality and narratives from 1987 to 1994, a dramatic shift occurred circa 1995, resulting in texts from 1996 to 2000 being overwhelmingly positive.

Consequently, of the 65 texts from 1996 to 2000: 1) not one possessed a strictly negative connotation of the U.S. economy, U.S. companies, or technology; 2) only three possessed a slightly negative narrative concerning the U.S. economy ("Economic Uncertainty" once in 1996 and then once in 2000 and "Economic Competitiveness" once in 1996); 3) not one possessed a negative technology narrative; and 4) only three possessed a slightly negative narrative concerning U.S. stocks ("Stock Competitiveness" once in 1996 and "Stock Uncertainty" twice in 2000). That results in a total of six slightly negative narratives from 1996 to 2000, compared with 117 boom narratives from these years—placing these negative or skeptical narratives in a very, very small minority.

A closer look at the negative narratives from 1996 reveals that they still possessed many positive elements. Moreover, these two speeches both occurred in June of 1996, which would be at just the very beginning of the boom in stock prices. Thus, these speeches would hardly constitute a challenge to the ensuing boom narratives of this period. To exemplify, below is an excerpt from Senator Duncan Faircloth's speech, in which he expounded an "Economic Uncertainty" narrative. Despite his concerns over economic matters, though, he remains solidly optimistic about investments in the stock market and expounds a "Stock Growth" narrative in the same speech:

> Further, I think a majority of Americans are trying to save more because they have less confidence that Social Security will be there for them when they retire. Also, the stability of company pension plans is

> questionable, so Americans are trying to save for themselves by investing in the stock market. (Faircloth, June 5, 1996)

Paul Saltzman, Senior Vice President of the Public Securities Association, gave a speech expounding themes of stock and economic competitiveness at the same hearing. However, as seen below, this speech is also somewhat positive, and is largely an effort to persuade Congress to reduce regulatory fees and other burdens on U.S. stock transactions:

> A continuously evolving system of regulation is vital to maintaining the efficiency of the U.S. securities markets. The continued ability of public and private securities issuers in the United States to raise capital cheaply and efficiently will help ensure that our economy remains competitive. (Saltzman, June 5, 1996)

Hence, aside from these moderately negative statements, from 1996 until the initial market drop of April 2000—the period in which stock prices soared to unprecedented levels—this sample did not include a single speech expounding a skeptical or pessimistic assessment of the U.S. economy or U.S. stocks. This was somewhat surprising considering how many senators were quick to label the run-up in stock prices in the late 1980s as an "irrational bubble" fueled by greed and manipulation. Even the possibility of such factors being at play in the late 1990s went entirely unmentioned in this sample. Only Alan Greenspan, on April 13, 2000, noted that: "Since 1996, for example, price-earnings ratios of NYSE stocks have risen by half." But he did not suggest at all that this rise could be the sign of a bubble. Rather, he saw it as further proof that the U.S. markets were the envy of the world.

8.2.7 Reactionary discourse

The remaining two speeches that possessed slightly negative narratives, both of uncertainty in the year 2000, were in reaction to the steep falls on the NASDAQ in April of 2000. Senators James Bunning and Rodney Grams were the only two speakers to comment on such losses:

> I also would like to hear from Chairman Greenspan about the recent losses in the securities markets. Specifically, I would like to know if he believes these losses have changed his views about the "wealth effect." I would like to know if these losses have him concerned about the overall state of our economy. (Bunning, April 13, 2000)

> Last week, the Nasdaq experienced its highest volume and most volatile intraday trading in history. (Grams, April 13, 2000)

As these two statements occurred after the peak in stock prices, they could do little to prevent the large crash ahead. Also somewhat revealing, despite observing the "most volatile intraday

trading in history," Senator Grams goes on to expound a "Sound Economy" narrative in the same statement:

> Given the combination and the combined impact of a sound economy, many new investors entering the market, and the astonishing impact which technological improvements have made on the securities markets, I have no reason to believe that the pace of change is going to slow down. (Grams, April 13, 2000)

It seems at this point that even the most volatile trading day in history could do little to counter the prevailing narratives of soaring stock prices, U.S. technological dominance, and a thriving, "new" economy.

8.3 Summary

In summation, the U.S. Senate Committee on Banking, Housing, and Urban Affairs—one of the nation's most powerful sources of regulative authority—gave heightened attention to the topics of stocks, markets, and equities just before (and after) the 1987 crash and the bursting of the tech bubble circa 1999 and 2000. Somewhat amazingly, their connotation of the U.S. economy shifted from almost 100 percent negative to nearly 100 percent positive within that period, with narratives transitioning from themes of crisis, abuse, and decline to themes of leadership, explosive growth, and a new economy. Similarly, the U.S. tech base shifted from being viewed as in a state of rapid decline to being viewed as a dominant global force.

At the peak of the tech bubble, these boom narratives were legitimized at one of the highest levels of government discourse. Five factors were identified in this regard, those being the spread and repetition of these narratives, the use of one boom narrative (technological dominance) to support another (new economy), the use of expert opinion, unequivocal language, and market idolatry. During the market run-up, speakers at this committee expounded very few narratives that attempted to challenge the status-quo, and the few that did were mostly in reaction to initial market falls. Hence, the U.S. Senate, one of the nation's peak regulatory bodies, made almost no attempt to deinstitutionalize the euphoria behind the tech bubble.

CHAPTER 9: SUMMARY OF EMPIRICAL FINDINGS

This chapter includes a summary and further analysis of the findings presented in Chapters 5 through 8. This chapter is divided into three parts.

First, on the following three pages in Tables 9.1 and 9.2, I provide a summary of the three pillars and a timeline of the tech bubble's event history and narrative analysis. These tables are designed to provide a brief overview of the core findings from the previous four chapters. They also allow for some preliminary comparisons.

Second, in Section 9.1 below, I construct the process story (Langley, 1999, p. 695) of the tech bubble's boom narratives. This story is constructed from the totality of my data and, aside from providing a concise, chronological summary of my findings, clarifies the sequences and relationships of my data. In this story, sequences and relationships allow me to explore the linkages between narratives and events (Pettigrew, 1990). While this stage of analysis provides a broad overview of my findings, it still remains highly contextualized in the tech boom of the 1990s. Thus, this stage of analysis—while achieving greater parsimony— remains high in accuracy but still low in generality (Weick, 1979).

Drawing on this process story, in Section 9.2 I arrive at a set of overarching conclusions of how the tech bubble's boom narratives were institutionalized and why efforts to deinstitutionalize these narratives ultimately failed. This section thus outlines the key empirical insights and contributions of my study. These empirical insights then serve as the foundation of a narrative theory of asset bubble formation, which is described in detail in Chapter 10.

9.1 The process story of the tech bubble's boom narratives

Below, I construct the process story of the tech bubble's boom narratives, as seen through the totality of my empirical data. This process story is divided into five sections, as seen in Table 9.2, of two and three-year intervals. As noted above, this story is designed to be concise and focus on the interrelationships between narratives and events. As such, this story focuses on the major themes and trends of the data, as opposed to the detailed counts and individual sources presented in Chapters 5 through 8.

Table 9.1 Summary of three pillars

Aspect	Cognitive pillar	Normative pillar	Regulative pillar
Attention to stock(s) (in title)	None	Frequent throughout, surge in 1990s	Surges in 1987/1988 and 1999/2000
Attention to equity (-ies) (securities) (in title)	Very rare	Common throughout	Surges in 1987/1988 and 1999/2000
Attention to market(s) (in title)	Frequent throughout	Frequent throughout, surge in 1990s	Surges in 1987/1988 and 1999/2000
Attention to technology (-ies, -ical) (in title)	Frequent starting in 1995	Dramatic surge in 1990s	Very rare
Attention to innovation(s) (in title)	Common starting in 1995	Common throughout	None
Attention to new economy (in title)	Only common in 1998 and 2000	Common starting in mid 1990s	None
Connotation of U.S. economy/companies	Transition from negative to mixed (1994) to positive (1997)	Transition from mixed/negative to positive (1993)	Transition from negative to mixed (1992) to positive (1996)
U.S. economy/company narrative	Transition from narrative of competition, to stability, to growth, to structural shift, to new economy, to transition	Transition from narratives of decline, uncertainty, and competitiveness to growth, leadership, and new economy	Transition from narratives of crisis, decline, and abuse to expansion and growth to leadership and new economy
Connotation of technology/innovation	Transition from no connotation to mixed (1994) to positive (1996)	Transition from positive to positive/mixed (1992) to positive/neg. (1997)	Transition from mixed/negative to ignored (1992) to positive (1996)
Tech company narrative	Transition from no narrative to one of dominance (1996) to uncertainty and shakeup (2000)	Transition from no/mixed narrative to mostly growth (1994) and dominance (1995)	Transition from decline to growth (1996) to dominance (1999)
U.S. stock narrative	Transition from no narrative to one of soaring stocks (1998) to sustainable stocks (2000)	Transition from no/mixed narrative to mix of negative/positive narratives (1995)	Transition from negative narratives to growth, preeminence, and soaring stocks (1996)

Table 9.1 Summary of three pillars (continued)

Aspect	Cognitive pillar	Normative pillar	Regulative pillar
Methods of institutionalization	• Spread and repetition of boom narratives (approx. 50% of speeches from 1995 to 2000) • Boom narrative destinator ("Structural Shift" narrative transitions to destinator) • Unequivocal language (especially by Chairman Alan Greenspan) • Rationalizing conflicting evidence (lack of output growth, SE Asia crisis, and absence of tech boom in Europe/Japan) • Expert references (primarily economists and BLS studies)	• Spread and repetition of boom narratives (52 counts in 73 articles from 1994 to 2000) • Boom narrative destinator ("Technological Dominance" serves as destinator) • Emotional triggers (envy and fear (mainly the fear of missing out)) • Rationalizing conflicting evidence (sky-high P/E ratios, falling stock prices, and some analysts ignoring the tech sector) • Expert references (broad array, numerous analysts and bankers) • Carefully selected historical data	• Spread and repetition of boom narratives (117 counts in 65 statements from 1996 to 2000) • Boom narrative destinator ("Technological Dominance" serves as destinator) • Unequivocal language (world's "safest" and "greatest" financial markets) • Market idolatry (markets as "envy of the world," "holy place," "nation's greatest asset," and "icons") • Expert opinion (mainly from banking, SEC/CFTC, exchanges, and government)
Reasons for failed deinstitutionalization	• Minority status of negative discourse (one negative connotation of U.S. economy from 1996 to 2000) • Reactionary discourse (new, pessimistic narratives emerged after influx of negative news)	• Minority status of negative discourse (one negative connotation of U.S. economy from 1995 to 2000) • Discrediting skeptics (referred to as "losers" and "Chicken Little")	• Minority status of negative discourse (no negative connotation of U.S. economy from 1996 to 2000) • Reactionary discourse (two narratives of uncertainty after market falls in April)

Table 9.2 Timeline of tech bubble event history and narrative analysis

Event history	• Markets crash (1987) • Fall of Berlin Wall • Fed raises rates to 9% • Hostile takeovers/LBOs • 401(k) emergence	• Brief recession • Soviet Union dissolved • Fed lowers rates to 3% • Union membership falls • 401(k)'s double	• Stocks up 50% (1990–95) • Fed raises rates to 6% • Inflation/unemploy. fall • Mutual funds common • Internet/PC sales take off	• Int'l crises (1997–1998) • Fed lowers rates to 5% • Telecom deregulated • CEO pay/options soar • Derivatives/SPVs spread	• Stocks peak • Fed raises rates to 6% • Glass-Steagall repealed • Venture capital growth • Day traders/financial news
Cognitive pillar	• Negative connotation of U.S. economy • Narrative of competitiveness and then stability • No connotation of technology or innovation • No tech narrative	• Various connotations of U.S. economy • Narrative of growth • No connotation of technology or innovation • No tech narrative	• Mixed connotation of U.S. economy • Narrative of growth • Mixed connotation of technology and innovation • No tech narrative	• Positive connotation of U.S. economy • Narrative of structural shift • Positive connotation of technology and innovation • Narrative of technological dominance • Narrative of soaring stocks	• Positive connotation of U.S. economy • Narrative of new economy and then transition • Positive connotation of technology and innovation • Narrative of technological uncertainty and shakeup
Normative pillar	• Mixed connotation of U.S. economy • Narratives of competitiveness, decline, and growth • Positive tech connotation • Few/negative tech and stock narratives	• Negative/mixed connotation of U.S. economy • Narratives of decline and cycles • Positive/mixed tech conn. • Narratives of technological growth and revival • Few stock narratives	• Mostly positive connotation of U.S. economy • Narratives of growth and new economy • Positive tech connotation • Narratives of technological growth and dominance • Various stock narratives	• Positive connotation of U.S. economy • Narratives of growth and new economy • Various tech connotations • Narratives of technological growth and dominance • Skeptical stock narratives	• Positive connotation of U.S. economy • Narratives of new economy and leadership • Various tech connotations • Narrative of technological dominance • Narrative of soaring stocks
Regulative pillar	• Negative connotation of U.S. economy • Narrative of expansion, then crisis • Increasingly negative tech connotation • No tech narrative, stock turbulence	• Negative connotation of U.S. economy • Narratives of decline, then uncertainty • Negative tech connotation • Narrative of tech decline • Narratives of stock myopia and sound stocks	• Mixed connotation of U.S. economy • Narrative of abuse • Tech ignored • No tech narrative • Narrative of stock abuse	• Positive connotation of U.S. economy • Narrative of growth • Tech mostly ignored, but positive when mentioned • Narrative of tech growth • Narratives of stock growth and preeminence	• Positive connotation of U.S. economy • Narratives of leadership and new economy • Positive tech connotation • Tech dominance • Transformation and soaring stocks
Year	**1987–1989**	**1990–1992**	**1993–1995**	**1996–1998**	**1999–2000**

9.1.1 The story of 1987–1989

As my data started in the year 1987, the year in which worldwide markets crashed and the Dow plummeted 22 percent in one day, it is no surprise that the discourse and narratives of this year were particularly negative. However, even before the crash, skeptical narratives emerged at the U.S. Senate that saw the U.S. markets as rigged and unfair amidst a Wall Street culture of greed and "merger mania." Such narratives coincided with the wild spread of hostile takeovers and LBOs.

After the crash, attention to the stock markets surged at the Senate, both media sources, and the Federal Reserve. During this surge of attention, all three sources expounded an extremely negative view of the U.S. economy. Negative narratives of economic crisis, economic decline, stock turbulence, stock uncertainty, and the need for economic competitiveness and stability (as seen in Japan) dominated discourse. While narratives at the three sources were similar in their tonality, prescriptions for economic growth and recovery were fundamentally different. Media sources and Reserve officials agreed that U.S. companies were overregulated and thus saw deregulation and lower taxes as key enablers in a recovery. In contrast, U.S. Senators argued that individual investors were leaving the markets in droves, a trend that required stricter regulations and tougher margin requirements to restore confidence.

By 1989, however, fears of a full-blown financial crisis were allayed and the negative discourse subsided—allowing the Fed to raise rates from seven to nine percent. While the connotation of the U.S. economy and companies was still somewhat negative at the Senate, attention to markets, securities, and stocks dropped off dramatically at all three sources. When mentioned, speakers frequently expounded the narrative that U.S. companies needed to expand internationally, requiring the government to remove any regulations impeding such a process.

What was particularly interesting in the late 1980s was the discourse surrounding technology and innovation. In general, very little attention was given to technology and tech companies, but when speakers did raise the subject, they frequently expounded rather negative views of U.S. tech companies and recent innovations.

As highlighted in Chapter 8, computer-driven program trading was repeatedly lambasted for its role in stock volatility, particularly at the U.S. Senate. In addition, by 1989, both the Senate and the media sources expounded narratives of U.S. technological decline, citing how the U.S. was losing market share (to the "predatory" Japanese) in numerous critical tech sectors such as TVs, computers, and semiconductors. As a result, tech investments were often viewed as "high risk and low reward."

9.1.2 The story of 1990–1992

In 1990, as the U.S. economy slowly slipped into a recession, attention to stock markets, tech companies, and innovation was low at all three sources. When mentioned, however, all three sources expounded a rather negative view of both the U.S. economy and U.S. tech companies. This negativity was strongest at the U.S. Senate and the media, as they viewed the U.S. in a state of severe economic decline where the country and its myopic investors were quickly losing its competitive edge to the leader of "patient capital," the Japanese.

Speakers frequently stressed that U.S. companies needed to innovate to keep up with foreign competitors and that without rapid improvements in its technological base, the U.S. would start to resemble an "underdeveloped country." While the Fed started to expound a narrative of economic growth, Reserve officials noted that deregulation and improved innovation were the keys to future success. Combined with a decline in GDP, such rhetoric compelled the Fed to start lowering interest rates.

In the media, negative sentiments of the U.S. economy continued into 1991, where journalists and interviewees gave increased attention to the tepid growth in stock prices, the lack of skilled labor available for U.S. corporations, and—despite recent moves by the Fed—the high interest rates preventing economic expansion. At the same time, though, discourse at the media and the Fed shifted somewhat in this year. Due to the success stories of companies such as Intel and Sun Microsystems, a few media articles started to expound narratives of technological growth and revival, marking the beginning of boom narratives in tech companies in the sampled texts. Over at the Fed, with the fall of communist regimes in Germany and the Soviet Union, alongside the continued decline in union membership in the U.S., Greenspan was now able to declare the superiority of market-based economic systems.

A bit of optimism continued into 1992, as media articles shifted to a narrative of economic competitiveness, albeit while bemoaning the high labor costs faced by U.S. corporations, and many U.S. Senators viewed the markets as a sound investment environment (and in turn argued that stricter regulations were unnecessary). However, all three sources shared in the view that the U.S. economic recovery was subpar and that the future was still very uncertain. Accordingly, the threat of a "triple dip recession" still loomed large. This perceived threat resulted in Greenspan and the Fed embarking on a series of further cuts, with rates tumbling from nine percent in 1990 to three percent in 1992, the lowest they had been in 30 years. Perhaps somewhat ironically, these cuts impelled U.S. citizens to take money out of long-term, secure investments in CDs and move it into the stock markets, a trend that was only just getting started.

9.1.3 The story of 1993–1995

In 1993, attention to stock markets, technology, and innovation remained extremely low at both the Fed and the U.S. Senate—with almost no mention of a "new economy." In contrast, the media sources continued to give increased attention to stock markets, equities, and, especially, technology. While unemployment and inflation were dropping, a trend that would continue throughout the decade, media articles gave a mixed portrayal of the economy. Several journalists shifted from a narrative of economic competitiveness to one of growth, but many were quick to point out that economic investment was riddled with problems, with "illiquid" real estate and long-term bonds still being viewed as risky options.

Such a lack of alternatives seemingly left stocks as the only real place to earn a fair return, with a few articles expounding a narrative of stock bargains. However, not all shared this view, with other articles already noting the euphoria in stock markets and claiming that current P/E ratios were unsustainable. After stocks continued to climb, though, these "bearish prognosticators" and their short-selling counterparts were, at times, branded as "the big losers" and "Chicken Littles" of the year.

While stock markets received increased media attention at this time, tech stocks did not. The media did comment that mergers were now more strategic and often conducted for entry into the telecommunications and high-tech industries, but tech's overall connotation remained mixed. The World Wide Web was now becoming a frequent media topic, and in turn PC sales and internet usage started to take off.

As the economy was still on the rebound in 1994, the SEC found it difficult to regulate options reporting. The U.S. Senate held hearings on the economic and stock abuse in which insiders profited from numerous mutual-to-stock conversions, but Senators were hopeful of the recent bull market. Over at the Fed, the dangers of financial innovation were still given some attention, but only fleeting at this point.

At the two media sources, 1994 represented a landmark year as discourse underwent a remarkable shift. Suddenly, there was a surge in attention to the "new economy" and texts became increasingly positive about the state of economic affairs. As 1993 provided good returns on the markets and Japan was now in the midst of an unprecedented economic slump, articles now frequently expounded a narrative of economic leadership, where the U.S. was now reclaiming its role as technological leader of the world. Such an assumption led to a marked surge in boom

narratives in this year, including numerous instances of a "new economy" narrative and a technological dominance narrative.

The "new economy" narrative saw the U.S. as experiencing a profound technological shift, a shift that would result in numerous businesses and even entire industries changing for good. New skills would be needed, new business models would be necessary, e-networks would eliminate the inefficiencies endemic in big bureaucratic corporations, and tech-savvy entrepreneurs would be the biggest beneficiaries. The U.S.'s technological dominance made digitized information the "lingua franca" of the time, and stock options and risk-taking venture capitalists were key enablers of such a transition. As some of these lucky entrepreneurs and venture capitalists were already making fortunes on IPOs, the media was quick to report on this newfound wealth—fueling amazement and envy in the public. Some journalists were even criticizing the nation's youth for spending four years in college learning obsolete skills and "wasteful" knowledge such as found in the classics, all when they could have been jumping on the road to high-tech riches. Amid such optimism, the Fed was able to raise rates, causing markets to slip. But this slip was extremely short-lived.

This almost unbounded optimism continued in the media into 1995. Attention to technology surged again, and the U.S. economy was viewed in an almost exclusively positive manner, marking a full-scale turnaround from the negativity of four years prior. Narratives of economic growth, economic leadership, a "new economy," and technological dominance dominated discourse. Adding to the legitimacy of such narratives, numerous references such as to tech executives and elite business school professors offered expert support to the media's rhetoric. While a few narratives of economic/stock decline, economic/stock cycles, and technological competitiveness were present, these represented minor parts of the overall discourse. Many of these negative narratives were in fear that the Fed would keep raising rates into the next millennium, a fate that would not come to be until the year 2000.

Adding further fuel to the growing tech mania, the Federal Reserve now suddenly gave increased attention to the themes of technology and innovation. While officials were wary of inflation, they became optimistic that technology could contain the stress it added to financial markets and propel the U.S. economy towards further growth. Concluding that the recession was now long past, the Fed opined that U.S. financial markets were "undoubtedly far more efficient than ever before."

Both retail and institutional investors took note of this restored confidence in financial markets. Over the five-year period to 1995, 401(k) investment doubled, with all major stock exchanges experiencing 50 percent gains.

9.1.4 The story of 1996–1998

1996 represented a landmark year at all three sources. At the Federal Reserve, attention to technology and innovation soared. Officials lauded the "five year economic recovery," and connotations of the U.S. economy became increasingly positive. Amid such optimism, numerous boom narratives emerged. Greenspan now declared that the U.S. had officially entered a period of structural shift, in which the economy was undergoing a radical economic transformation that would result in higher living standards for all U.S. citizens. This "rare, once-in-a-century event" was enabled by unprecedented technological advancements, risk-taking venture capitalists, and the government's recent efforts at deregulation.

The tonality surrounding technology and innovation was also extremely positive at the Fed, resulting in the emergence of a technological dominance narrative. One small problem with such a narrative was that the U.S. economy had yet to show any statistical evidence of an increase in output or efficiency from this alleged technological shift. Greenspan easily rationalized this problem, however, by explaining that such improvements would "take time" and offered the expert support of elite university professors to legitimize such a claim.

Over at the U.S. Senate, a similar shift in discourse occurred, as connotations of the U.S. economy became increasingly positive. A narrative of economic growth became common, and Senators viewed the tech industry as the primary driver of such growth. Tech companies were admired for creating new, cutting-edge jobs that paid higher wages and required greater investment in R&D. For this reason, the Senate vehemently argued for, and passed, legislation enabling venture capitalists to raise new sources of capital for high-tech startups.

At this time, U.S. Senators also became fixated on the U.S. stock markets and their continued growth. In almost universal agreement, Senators noted that U.S. markets held a preeminent position in the world. Due to the success of tech companies and venture capitalists, these markets were now "the envy of the world," "the safest in the world," and, clearly, "the best in the world." SEC Chairman Arthur Levitt testified that Americans were now "more investment literate than at any time in history" and thus argued they required less protection in their financial decision-making.

In the media sources, attention remained high for technology, innovation, stock markets, and equities. In general, journalists and interviewees expressed positive views of the growing U.S. economy, as narratives of technological dominance continued to spread. Thus, across the board, the three pillars of institutional reality presented glowing reviews of the U.S. economy. Investors, submerged in this discursive context, now started to place bigger bets on future market gains, with

the Dow, S&P 500, and NASDAQ all shifting toward steeper hikes by the end of the year. An extremely low rate of inflation (assisted by the Boskin Commission), allowed the Fed to lower rates to five percent, further fueling the beginnings of a market frenzy. Large corporations competed for executives by offering larger and larger pay packages, with many companies using financial innovations in derivatives and SPVs to (at times, illegally) further boost share prices.

Not all discourse from this year was positive though. While the Fed and U.S. Senate possessed almost exclusively positive assessments of the economy and stock markets, several media articles started to question the soaring IPO valuations and gains of start-up tech companies (often with very little revenue backing up such valuations). Tech was given a mixed assessment in these articles, with several journalists commenting on the "loony goings-on in tech." These journalists criticized companies for engaging in copycat behavior and posting unsustainable growth rates in their profits. Many warned of a slowdown ahead. Concerning the stock market, skeptical views were now widespread. A growing majority of articles expounded narratives of stock euphoria, warning of an imminent stock shakeup. These articles frequently pointed at rookie mutual fund managers, new investors, and untrustworthy analysts as touting an unfounded "faith" in tech stocks.

Surprisingly, in 1997, such skeptical narratives in the media started to dissipate. While tech still received a mixed view, narratives concerning the U.S. economy became very positive. Boom narratives of economic leadership and a "new economy" abounded. In response to the skepticism of some journalists, articles started to contend that recent market gains were not signs of a mania but were, in fact, justified. Expert references to bankers, analysts, consultants, and tech executives helped to legitimize the claim that valuations were justified on the basis that tech companies still had high growth projections and record sales levels. As markets did not fall off a cliff, skeptics were discredited, and experts warned that "avoiding the market remains a risk."

Over at the Fed, despite Greenspan's questioning of "irrational exuberance" in late 1996, discourse became almost exclusively positive concerning the U.S. economy and technology. A structural shift narrative was now dominant, as Greenspan commented that it was "no surprise" that tech companies had high stock market valuations. While economic statistics had still yet to show signs of marked improvement, Greenspan promised, with the aid of similar expert references, that "the truly significant increases in living standards" lie ahead.

Investors believed him. While 1997 witnessed a brief drop in tech stocks, overall gains continued almost unabated. Mutual funds continued their meteoric growth, and deregulation by Congress allowed the telecommunications industry to embark on an unprecedented borrowing binge.

With now almost unboundedly positive discourse supporting the tech revolution, the tech bubble entered its wildest years.

In 1998, as the SE Asia crisis reached is climax and panic spread to Russia and Latin America, stocks dropped off. Around the same time, the CFTC proposed to probe the regulation of new financial derivatives, which remained poorly understood by most of the general public, including large parts of the investment community. Such events could have spelled the end of a very brief one or two-year tech bubble. But that was not to be the case. Greenspan responded to the crisis by lowering rates—the origin of the "Greenspan Put"—and, with the help of Robert Rubin, successfully shelved the CFTC's proposal. Also, in spite of the economic chaos across the globe, economic discourse in the U.S. became even more positive.

Increased positivity was apparent at both the Fed and the media. At the Fed, Greenspan and his fellow officials praised the "new economy" and highlighted its eventual effects on altering production, trade, and the delivery of most goods and services. Greenspan justified soaring stock prices on the higher productivity of tech companies, which were able to keep costs (and thus inflation, enabling his rate cut) low. Greenspan quickly rationalized the SE Asia crisis as the result of excessive central planning, meaning capitalist forces had no part to play.

At the media sources, skeptical or negative narratives all but disappeared. Boom narratives, in contrast, took over. Expert references in the media, often tech investors and analysts, claimed that the recent dips in tech stocks were merely signs of profit-taking by institutional investors and thus tech stocks represented "bargain" deals. These experts warned that many investors were "seriously underweighted in technology stocks," while warnings of euphoria and shakeup went entirely absent from the sample. Such rationalizations were well received, and by the end of 1998, venture capitalists, hedge funds, and mutual funds were pouring money into the tech sector with reckless abandon, resulting in extraordinary IPO valuations and gains in this year.

9.1.5 The story of 1999–2000

In 1999, discourse at the U.S. Senate underwent a dramatic shift. In this year, the U.S. Senate gave increased attention to stock markets and spoke with almost unadulterated positivity about the U.S. economy. Amid such optimism, economic boom narratives proliferated. While the narrative of a "new economy" started to spread, one of economic leadership became equally popular. In this narrative, the U.S. was now (once again) the worldwide economic leader, and this leadership was driven primarily by the rejuvenated tech sector. Such narratives were not only expounded by

Senators but also by numerous expert witnesses, many of whom represented the banking and securities industries and the major stock exchanges.

At the same time, Senators and witnesses viewed technology in a very positive manner, with Senators recognizing the "unprecedented" technological advances of the past few years. As a result, a technological dominance narrative emerged and spread rapidly. Optimism over the tech sector also led to optimism over the stock markets. Narratives of soaring stocks and a stock transformation took over. A stock transformation narrative saw new, privatized markets powered by IT representing the "most efficient and the most trusted" markets in the world. Senator Philip Gramm, Chair of the Committee at the time, summed up the soaring stock narrative best when he opined:

> Because the value of equities is primarily related to knowledge, when people can have massive amounts of knowledge at almost zero cost, that is bound to have a profound impact on the equity markets of America and the world.

Amid this optimism, Congress saw no reason to clamp down on conflicts of interest at investment banks and consulting firms and thus stifled an attempt by the SEC to further regulate these industries. Sticking to their continued efforts at deregulation, Glass-Steagall was finally repealed.

Similarly, over at the Federal Reserve, attention to the markets and technology soared, with Reserve officials granting a very positive assessment of U.S. economic affairs. A structural shift narrative was now widely accepted and became the context by which a "new economy" narrative was able to dominate discourse. The adoption of a structural shift narrative was further legitimized by references to research by economists that revealed how two-thirds of the nation's productivity gains since 1995 were due to high technology. During this year, only one sampled speech presented a negative view of the U.S. economy, that of Alice Rivlin, who possessed far less influence and power than the continuously optimistic Chairman, Alan Greenspan. While Lawrence Meyer also warned of potential bank risks, neither of these two dissenters questioned the tech boom narratives of the time.

At the media sources, positive connotations of the U.S. economy continued, with boom narratives of a "new economy" and economic leadership taking over. While a few articles noted the increased frequency of IPO busts, a technological dominance narrative was still in the majority. This narrative was further institutionalized by various experts, such as investment bankers and analysts, who claimed that the Internet was "truly a dramatic life-changing event"—thus justifying the sky-high valuations of tech companies.

While the media regained its skepticism of stock valuations, the euphoria surrounding tech companies and the riches being made was hard to ignore. In the sample, stories of newly made tech billionaires such as Jim Clark were ubiquitous. Stories of non-profits even benefitting from the tech boom, in order to fund their operations, were reported without a trace of caution. And once again, "bearish prognosticators" were discredited.

Thus, overall, in the year 1999, attention to markets and tech companies soared and boom narratives proliferated with great legitimacy at all three pillars of institutionalization. Despite sky-high P/E ratios, investors could not escape their institutional, discursive reality. In response, investors doubled-down. Margin debt soared, share turnover reached unprecedented levels, and household savings collapsed to historic lows. As CNBC-addicted day traders grew in numbers, stocks soared higher each month, with the NASDAQ doubling within a year.

Fueled by their accurate predictions of years past, all three sources became even more positive in early 2000. The media sources saw another surge in attention to stock markets, technology, and the "new economy." Connotations remain positive, and narratives of a "new economy" and technological dominance are present in the vast majority of articles. Surprisingly, articles skeptical of recent stock gains now account for a very small minority, and narratives of soaring stock valuations gain traction. Moreover, articles report almost exclusively positive data and statistics concerning U.S. stock markets. Topics such as historically high P/E ratios, the volatility and bubbles of the late 1980s and early 1990s, and the continued falls in stocks over in tech-heavy Japan are almost completely ignored. As a result, readers are left with the impression that stocks seemingly always go up and represent a rather safe, even risk-free investment at this time.

Attention to markets and securities also surges at the U.S Senate, where Senators and witnesses continue to expound very positive views of the economy. For example, in February of 2000, witness Charles Schwab opined, "I don't think there has ever been a better period in our history for investors." Narratives of a "new economy," structural shift, and explosive growth spread. A narrative of technological dominance is now ubiquitous at the Senate, while Senators continue to lambast numerous "over-reaching regulations."

Witnesses at the U.S. Senate continue to voice narratives of booming stock prices, without a mention of the bubbles or market manipulation of a decade ago. Even SEC Chairman Arthur Levitt was thoroughly confident of continued economic growth, claiming in February, "At this point in the evolution of our markets, I remain solidly optimistic about the future." Going a step further, numerous speakers expressed feelings of deep reverence towards the stock markets, with Wall

Street now referred to as a "holy place" and Alan Greenspan introduced as the "Nation's teacher and adviser." Senators concluded that these idolized assets were in no need of any further regulation.

Over at the Fed, attention to technology, innovation, and the "new economy" doubles, while officials express an exclusively positive connotation of the U.S. economy. In May, Roger Ferguson comments that "even the most optimistic of forecasters could not have anticipated such a favorable confluence of economic events." Almost every sampled speech at this time revealed a "new economy" narrative. The "new economy" was now heavily institutionalized at the Federal Reserve, as officials noted the economy was "profoundly different" from previous business cycles and that information technology had "almost certainly" pushed out the point at which scale diseconomies take hold. In response to why the tech-savvy Japanese were not experiencing a similar tech boom, Greenspan quickly rationalized that Japan's, and Europe's, inflexible labor laws prevented them from benefitting from recent advances in IT.

With the economy in good shape, Greenspan became concerned that the tech boom was going to result in wage inflation and decided to raise rates to six percent in March. Before such time, he expressed some concerns of a stock bubble but concluded that it was impossible to tell and that "history will judge" if a bubble exists. Almost instantly, history came to fruition. Within a month, stocks tumbled, with the NASDAQ dropping 10 percent on one day alone. Hedge funds and mutual funds, knowing that markets were thinly stretched, decided to abandon ship and quickly became aggressive sellers of tech stocks.

Near the end of the year 2000, Reserve officials started to comment on the recent drops. Roger Ferguson noted that it was becoming difficult to turn a profit in the tech sector. In December, Greenspan forecasted a transition to "more modest rates of growth" as tech supply had clearly outstripped demand. Greenspan remained calm, though, and ensured his audience that "to be sure, our current circumstances are in no way comparable to those of 1998."

These reactionary comments were still far too optimistic. The aggressive selling by institutional investors continued almost unabated, and over the next two years U.S. markets experienced an unprecedented collapse, with the NASDAQ losing 80 percent of its value.

9.2 Overarching conclusions from empirical data

Drawing on the process story outlined above, in this section I arrive at a set of overarching conclusions of how the tech bubble's boom narratives were institutionalized and why efforts to deinstitutionalize these narratives ultimately failed. These conclusions thus represent the major

empirical insights and contributions of this study. As in the previous section, these conclusions remain highly contextualized in the tech boom of the 1990s. In the next chapter, these insights serve as the foundation of a narrative theory of asset bubble formation.

Based on the findings of this study, I reached eight overarching and interrelated empirical conclusions. These include five conclusions as to how the boom narratives of the 1990s were institutionalized and three conclusions as to why efforts at deinstitutionalization ultimately failed. Concerning the former, boom narratives became institutionalized during the late 1990s through: 1) the full alignment of narratives at the three institutional pillars just before and during the market run-up, creating an inescapably optimistic context in which investors made decisions; 2) the one-sided narratives at the (reputedly) more prudent cognitive and regulative sources; 3) the transition from negative to mixed to positive discourse and narratives; 4) the emergence of a broader narrative of a technological, structural shift, which became the context by which a "new economy" and various soaring stock narratives made sense; and 5) the reliance on numerous alternatives to detailed, fundamental analysis, which included the use of unequivocal language, emotional triggers, rationalizations of conflicting evidence, expert references, carefully selected historical data, and market idolatry.

Concerning the latter, efforts at deinstitutionalizing these narratives failed because 1) despite some early skepticism from normative texts, negative narratives comprised a very small minority of discourse just before and during the market run-up; 2) these early skeptics were, at times, discredited and disparaged as the markets climbed higher; and 3) the most skeptical narratives emerged after markets peaked, thereby only further fueling the steep falls ahead.

Below, I explain each of these eight overarching conclusions.

9.2.1 Full alignment of institutional pillars

From 1987 to 1993, texts from all three pillars expounded a rather negative portrayal of the U.S. economy and U.S. companies. Concurrently, technology and U.S. tech companies were largely ignored, but when they were mentioned, they were frequently used as examples of the U.S.'s economic decline. During these years, speakers warned that unless the U.S. improved its technological base, the country would likely continue in its slump and potentially fall far behind the technological leaders of Japan and Germany, for instance.

The years 1994 and 1995 saw the emergence of quite a few boom narratives, mostly at the media sources. However, during these years, attention to stock markets and technology remained

low at the U.S. Senate, while Reserve officials remained somewhat cautious in their economic assessments.

The year 1996, however, truly represented a landmark year in the sampled data. All three sources were now producing a clear majority of positive texts, with boom narratives starting to dominate discourse. Narratives of a structural shift, a "new economy," technological dominance, soaring stocks, and stock preeminence took over. While a few media texts remained critical of stock valuations, these texts comprised a very small minority of the sample data from this year, a point that will be further elaborated upon in Section 9.2.6.

Thus in the year 1996, the three sources were fully aligned in their promulgation of boom narratives and increasingly positive economic forecasts. As such, the discursive, institutional context was inescapably optimistic for investors in this year, providing a well-defined and well-structured social reality that foresaw continued gains for the U.S. economy and U.S. (tech) companies. Investors responded to such optimism, with the following year of 1997 being the year stocks took off. From 1997 to early 2000, the three sources not only remained aligned but they also continued to produce texts of increasing optimism—matching the historic rise in stock valuations and P/E ratios.

The data counts supporting this trend were remarkably one-sided. Collectively, from 1987 to 1993, the three pillars produced a total count of only 13 boom narratives. By 1996, boom narratives proliferated. From the cognitive pillar, 26 of the 42 sampled speeches from the years 1996 to 2000 included at least one boom narrative, producing a total of 37 boom narratives in those speeches. From the normative pillar, from 1994 to 2000, 73 articles produced 52 counts of a boom narrative. From the regulative pillar, in just the two years 1999 and 2000, 45 statements resulted in 36 economic boom narratives and 35 technological boom narratives. From 1996 to 2000, the regulative pillar produced 46 stock boom narratives in just 65 statements. While the texts from each pillar differed in content, style, and length, they all shared the same overwhelmingly optimistic portrayals of the U.S. economy, U.S. tech companies, and U.S. stock markets in the latter half of the decade.

As noted in Chapter 4, these sources represent the highest level of institutional discourse for each respective pillar. The U.S. Federal Reserve, the U.S. Senate, *The New York Times*, and *Fortune* magazine were (and still are) extremely well-trusted and powerful sources of institutional dialogue—for both investors and non-investors. Their collective production of almost exclusively positive economic texts from 1996 to early 2000 thus demonstrates the full alignment of the institutional pillars during these manic years.

9.2.2 One-sided discourse at cognitive and regulative sources

As noted above, from 1994 to 2000, normative media texts expounded a large number of boom narratives, placing these narratives and the positive discourse surrounding them in the majority. However, normative texts also revealed some degree of balance in the discourse and narratives produced.

This balance was largely achieved through the media's U.S. stock narratives. As early as 1993, the media sample produced texts skeptical of recent stock gains, expounding a stock euphoria narrative. Then, from 1995 to 1997, the vast majority of stock narratives produced were ones of stock euphoria, stock cycles, stock shakeup, or stock decline, leaving narratives of soaring stocks, stock bargains, and stock growth in the minority. Overall, from 1994 to 2000, the media texts produced 50 percent more negative or skeptical stock narratives than the boom narrative of soaring stocks.

Such balance could not be found, though, in the cognitive and regulative texts, where narratives and the discourse surrounding these narratives became one-sidedly positive in the latter half of the decade. From the cognitive pillar, the 42 speeches from 1996 to 2000 resulted in only one negative connotation of the U.S. economy, only three negative or skeptical economic narratives, not a single negative connotation of U.S. tech companies, and only three negative or skeptical stock narratives (both after initial market falls). In the regulative texts, such negativity proved even more elusive. From 1996 to 2000, 65 texts produced not a single strictly negative connotation of the U.S. economy or U.S. tech companies, only three slightly negative economic narratives, and only three slightly negative stock narratives. Combined with the continued promulgation of boom narratives, as was highlighted in the section above, discourse at the cognitive and regulative sources was surprisingly one-sided in its optimistic assessments and forecasts during these boom years.

What makes this one-sided discourse so surprising is that the cognitive and regulative pillars represent (at least reputedly) more prudent sources of economic discourse. While the media and other normative texts (such as informal conversations, meetings, and blogs) are often blamed for hyping various investments, cognitive and regulative texts (such as research publications, textbooks, and government speeches) are usually thought to promote more rational and conservative discourse. Thus, as in this sample, when these more cautious sources of economic discourse become increasingly one-sided in their narratives, even the more skeptical of investors (the type perhaps less interested in what CNBC talk show hosts say) become submerged in an overwhelmingly optimistic institutional environment.

9.2.3 Transition from negative to mixed to positive narratives

As detailed in Section 9.1, from 1987 to 2000, the discourse and narratives produced at the three pillars transitioned from negative to mixed to positive tonalities. For each phase, the narratives produced had a very strong alignment with the actions of those with market power, which ultimately influenced everyday retail investors in several direct and indirect ways.

The negative phase of discourse started in 1987, the year markets crashed, and continued throughout the recession until the year 1992. During these years, narratives of competitiveness, decline, and crisis dominated economic discourse, while most speakers ignored the tech sector and voiced concerns over stock turbulence and myopia. At the Fed, newly-in-charge Greenspan responded in line with these negative sentiments by cutting interest rates several times, down from nine percent in 1990 to three percent in 1992, a dramatic cut that resulted in rates reaching their lowest levels in 30 years. This large cut, as intended, had the immediate impact of influencing investors to take money out of long-term deposits and move it into riskier investments. With real estate mostly ignored or regarded as dangerously "illiquid," investors responded by moving money into stocks.

As the U.S. economy recovered and markets started to climb, 1993 to 1995 represented a period of mixed discourse. Narratives of economic and technological growth emerged, but many texts remained skeptical of recent stock gains and the continued international expansion of U.S. companies. These economic conditions convinced most U.S. Senators that the U.S. was once again a sound investment environment (and thus the strict regulations advocated after the 1987 crash were not necessary) and that U.S. companies needed government assistance in order to compete internationally (and thus further deregulation was necessary). In response, over the next few years, the U.S. Senate would embark on numerous deregulatory campaigns, such as passing legislation that helped venture capitalists raise new sources of capital for tech start-ups (which, as already portrayed in the media, were the drivers of the U.S.'s economic revival) and the deregulation of the telecommunications industry. A potential feedback loop emerged here, where a mixed economic outlook led to efforts at deregulation. Such deregulation encouraged immediate investment (and speculation), raising asset values and economic indicators, which in turn convinced Senators that deregulation was working.

As interest rates remained relatively low and deregulation took effect, stocks started to take off, marking the beginning of a period of positive discourse from 1996 to 2000. During this time, the vast majority of narratives viewed the tech sector (not low interest rates or deregulation) as the primary driver of economic and stock growth. With loose credit, decreasing regulation, and the

control over large pools of savings from retail investors, institutional investors such as mutual funds, hedge funds, and investment banks started to place big bets on tech stocks. During this period, a very powerful feedback loop emerged for stock investments. That is, as boom narratives spread, large institutional investors and a growing number of day traders poured (increasingly borrowed) money into U.S. stocks, particularly tech stocks. This flood of investment caused those stocks to immediately spike, which further supported the prevailing boom narratives and allowed market bulls to continue discrediting the skeptics of years past.

Equally important at this time, very few texts were skeptical of the market run-up, particularly at the Federal Reserve or U.S. Senate. As such, neither the Federal Reserve nor the U.S. Senate saw any need to prick a bubble, for, in their view, one did not even exist.

This laissez-faire approach enabled speculation to continue for a few years, until a rate hike in 2000 caused markets to slip. After this slip, skeptical discourse emerged, and savvy institutional investors pushed the investment loop in the opposite direction, as negative discourse can also fuel market selling, which in turn can fuel negative discourse.

9.2.4 Context of structural, technological shift

As in the overall discourse over the sample period, at all three pillars, the theme of technology underwent a remarkable transition in just the ten years from 1987 to 1997. At the beginning of the sample period, texts from all three pillars lamented the decline of U.S. tech companies. Once viewed as the leaders in producing and exporting new technologies, the U.S. was now quickly falling far behind the Japanese and Germans. Making matters worse, technology was viewed as (at least partially) responsible for the extreme volatility on the once-steady but now-mercurial U.S. stock exchanges.

By the year 1993, however, such discourse quickly subsided and technology was now either ignored by most sources or viewed in a rather favorable manner—often as a solution to the problems it created. Especially in the media sample, texts started to note the rising fortunes made in the telecommunications and computer networking sectors.

Just a few years later, by 1996, technology became the main discussion point, and narratives of technological dominance and a concomitant structural, economic shift abounded. U.S. tech companies and their regained international prowess were now viewed as the driver of economic growth and expansion, swiftly pulling the U.S. out of recession and into a new and exciting future marketplace. A key finding from my sample is that this technological dominance and once-in-a-

century economic shift went largely unquestioned and unchallenged, especially during the market run-up of 1997 to early 2000.

With this remarkable technological shift as the now taken-for-granted context in which U.S. companies operated, narratives of a "new economy," economic leadership, explosive growth, stock transformation, and soaring stock valuations proliferated. Important here is that these narratives only made sense in the context of a technological shift. In other words, if the U.S. was not regaining its technological prowess and the endless stream of internet start-ups did not represent the future of commerce, then soaring P/E ratios and a new and exciting e-network economy would be hard to justify. However, such a debate never emerged. U.S. tech companies were creating the future marketplace, and everyone wanted a seat on the ride. The only debate that did take place during these boom years was by how much would stocks continue to rise and who would get the largest share of the spoils.

9.2.5 Alternatives to detailed, fundamental analysis

As explained in Chapter 2, the tech boom of the 1990s presented investors with a situation of great uncertainty. Widespread innovations in computing and information technology gave rise to a host of new organizations and services. Similar to the widespread adoption of automobile and radio technologies, it was difficult to use past examples as a template or guide as to how business would change and, more importantly, how such changes would affect living standards and the market valuations of the ever-growing number of start-up firms.

In the sample, numerous texts acknowledged this uncertainty, and very few even feigned an attempt at using detailed, fundamental analysis to support the claim that a "new economy" was emerging and thus skyrocketing P/E ratios were justified. Instead, texts from all three pillars relied on a range of "alternatives" to fundamental analysis in support of their boom narrative claims. These alternatives included the use of unequivocal language, emotional triggers, rationalizations of conflicting evidence, expert references, carefully selected historical data, and market idolatry.

Of these six alternatives, the use of expert opinion was by far the most common, appearing at all three pillars. Such references offered a seemingly objective sense of legitimacy to the boom narratives being expounded. At the Fed, references were frequently to economists at prestigious universities, such as Greenspan's frequent references to Professor Paul David of Stanford University in support of his structural shift narrative, but also to a variety of studies produced by the BLS. In the media texts, references to analysts, traders, tech executives, venture capitalists, consultants, and investment bankers formed the majority. As is well known, many of these sources

had a vested interest in promoting a positive outlook for economic and stock growth. At the Senate, the voice of experts often took center stage at these hearings, with the banking and securities industries represented in twice the numbers as market regulators.

The practice of rationalizing conflicting evidence was present in both cognitive and normative texts. In cognitive texts, Greenspan responded to the lack of fundamentals (such as output or efficiency gains) supporting his claims of a structural shift by rationalizing that tech-related expenditures should be treated as assets and that the true benefits of recent technological advances would take time to seep their way into the nation's economy. He later rationalized both the SE Asia crisis and the lack of any tech boom in Japan as caused by excessive government intervention in the banking sectors and labor markets, respectively. In the media texts, skyrocketing P/E ratios were argued to be reasonable based on the favorable growth estimates and the expanding presence of the tech sector. Falling stock prices were rationalized as "buying opportunities" or signs of "profit taking by institutional investors," while the observation that some analysts still ignored the tech sector was rationalized as a sign of these analysts chasing investment banking fees. Interestingly, at both pillars, numerous discussions of conflicting evidence were used as further opportunities to support the prevailing boom narratives.

The frequent use of matter-of-fact, unequivocal language was found in both cognitive and regulative texts, which are, again, reputedly more cautious sources of economic discourse. Greenspan, U.S. Senators, and Senate witnesses all excelled in the use of overly optimistic and unreserved language. While Greenspan claimed in 1995 that "financial markets undoubtedly are far more efficient today than ever before," Charles Schwab concluded in 2000, two months before the bubble popped, that "I don't think there has ever been a better period in our history for investors." The continued and widespread use of such language at two of the reputedly most conservative sources of economic discourse conferred great certainty to investors and non-investors alike.

The other three alternatives were only present in one pillar each, suggesting their use was confined to certain forms of institutional discourse. Surprisingly, perhaps the most emotive form of support for economic and market gains, the practice of market idolatry, was only present at the U.S. Senate, and mostly by the Senators themselves. Perhaps less surprising was the use of the emotional triggers of fear and envy and the careful selection of historical data found in media texts.

While each of these six alternatives would likely be ineffective in-and-of-themselves, combined, they offered a powerful and unrelenting stream of varied support to the spread of overly optimistic economic, tech, and stock narratives from the mid to late 1990s.

9.2.6 Minority status of negative narratives

As already explained in Section 9.2.2, the normative pillar did in fact question narratives of soaring stock valuations as early as 1993, with such skepticism continuing throughout the sample period in numerous normative texts. However, aside from this early skepticism of a soaring stocks narrative at the normative pillar, the majority of narratives expounded just before and during the market run-up were positive in their connotation of the economy, technology, and stock markets, with much of the remainder taking on a mixed tonality. This positive shift and alignment of the three pillars has already been rather thoroughly discussed in this chapter.

The positive stream of narratives produced in the mid to late 1990s stands in stark contrast to the negative and skeptical narratives found earlier in the sample period. For instance, in the cognitive pillar, only four of the 23 sampled speeches from 1987 to 1995 possessed a positive connotation of the U.S. economy, while not a single one of these speeches contained a boom narrative. In normative texts, only nine of the first 62 articles from 1987 to 1992 possessed a positive connotation of the economy, and in regulative texts, only five of the first 123 statements from 1987 to 1990 viewed the economy in a positive light. The point being, from 1987 to at least 1992, negative economic, tech, and stock narratives were supported by a bevy of similar views, and as a result, positive economic outlooks could do little to change the tide. From 1995 to early 2000, though, just the opposite occurred. With positive narratives now in the clear majority, narratives skeptical of soaring stock valuations and "new economy" claims had little effect.

A few other factors further constrained the discursive influence of these skeptical narratives. At the Federal Reserve, the more negative opinions of Alice Rivlin and Laurence Meyer stood up against the relentless positivity of the much more influential Alan Greenspan. While Greenspan himself did mention the possibility of a bubble on a few occasions, he continued to conclude that bubbles were impossible to identify before their bursting. In the media texts, skepticism was much more common at the beginning of the market run-up, circa 1996. Then, from 1998 to 2000, when P/E ratios truly lost touch with reality, skepticism halved. Lastly, a similar theme of early skepticism was found at the U.S. Senate, and these early skeptics still included many positive elements in their texts. Hence, overall, these negative narratives exerted minimal discursive and institutional influence.

9.2.7 Discrediting and disparaging of skeptics

As just mentioned, an interesting feature of the skeptical normative texts was their dissipation over time, just as P/E ratios started to reach historic levels. From 1995 to 1997, 27 percent of the

sampled media texts possessed a negative or skeptical stock narrative, a frequency that collapsed to 13 percent of sampled media texts during the manic years of 1998, 1999, and early 2000.

As theorized in Chapter 7, a possible explanation for this drop is the presence of numerous media texts that publically discredited and even disparaged these early skeptics. As early as 1993, articles (such as Norris, 1993 and Teitelbaum, 1994) referred to bearish investors as "the big losers" and "Chicken Littles" of the past year.

Such texts were eager to point out the inaccurate forecasts of some skeptical economists as the markets soared, while other texts noted (without providing any support) that financial journalists had "been wrong about stocks for nearly a decade." As markets started to heat up in 1996, these discrediting texts largely concluded that the biggest risk that investors could take was "not being invested in the market."

As a result, and quite ironically, skeptics either toned down their bearish forecasts or were given less media presence (the institutional effects being equal) when markets turned sharply higher and P/E ratios soared. The skeptical texts of years past had been "proven wrong" and the twin fears of looking foolish as either a skeptic or a bench-sitter replaced any fear of the risky investments in unproven start-up firms.

9.2.8 Reactionary narratives

Starting in April of 2000, sampled texts became increasingly negative. At both the cognitive and regulative pillars, texts lost their unbounded optimism over the economy and the market valuations of start-up tech firms. As the NASDAQ had already suffered a large intraday 10 percent collapse and numerous tech firms started to fold amidst tightening credit conditions, these pessimistic narratives were purely reactionary. Making matters worse, such discourse likely only further fueled the selling of the next few years, with institutional investors being the first to abandon ship.

Somewhat surprising, though, is that despite the recent volatility and drops on stock exchanges and the growing mountain of dot-bomb collateral, even these negative texts managed to present a somewhat balanced view of the situation. For example, while Laurence Meyer criticized the "irrational exuberance" of some financial journalists, he predicted a "benign" outcome to the unfolding events.

At the Senate, Senator Rodney Grams started his statement by noting the NASDAQ just experienced its most volatile trading day in history, but then went on to expound a narrative of a sound economy in which "many new investors were entering the market."

Alongside Alan Greenspan's assurances in December of 2000 that "our current circumstances are in no way comparable to those of 1998," elements of unbounded optimism lingered on well into the market crash.

CHAPTER 10: TOWARDS A NARRATIVE THEORY OF ASSET BUBBLE FORMATION

This final chapter outlines the main theoretical contributions of this study. Building on the I/N perspective explained in Chapter 3 and the findings of the empirical study presented in Chapters 5 through 9, this chapter is devoted to the development of a narrative theory of asset bubble formation.

This theory provides an argument and detailed account of the role that narratives play in asset bubble formation. By shifting from the empirical to the theoretical, this account thus provides an explanation of how some other asset bubbles may have formed in the past (aside from the U.S. tech bubble) and a prediction of how future bubbles can develop.

This chapter is divided into four parts. In the first section, I explain in detail the central argument and boundary conditions of the narrative theory of asset bubble formation. As this theory proposes three narrative phases in which bubbles form, I then explain each phase and its key conditions. I also include a few examples of how this theory is supported by previous bubbles, particularly the U.S. tech bubble.

In Section 10.2, I explore some of the more important implications of this theory for research, policy, and business practice. As the narrative theory provides a novel and rather detailed description of how large-scale bubbles can form, the theory serves to complement, integrate, and challenge existing thought on these episodes. In addition, given the central role that powerful institutional actors, such as central bank officials and government representatives, play in this theory, numerous implications arise for both policy makers and business practitioners. Section 10.2 details these theoretical and practical implications.

Section 10.3 then focuses on the limitations of this study and offers a number of suggestions as to how future research can start to test, expand, and build upon the narrative theory. Finally, in Section 10.4, I provide a few concluding remarks.

10.1 A narrative theory of asset bubble formation

In this section, I outline a theory of how narratives drive asset bubble formation. This theory is built on the assumptions of the I/N perspective described in Chapter 3 and the empirical findings of my study presented in Chapters 5 through 9. This theory is a product of a further step of analysis, which was temporal bracketing.

In this final step of analysis, I abstracted the data from my study and explored areas of continuity and discontinuity. As a result, this theory remains closely grounded in the events and

narratives of the U.S. tech bubble, but it also allows for analysis, understanding, and prediction of other bubbles.

In short, the narrative theory of asset bubble formation argues that asset bubbles are driven primarily by narratives and that bubbles can form through a three-phase process of crisis, recovery, and boom. The theory contends that, during these three phases, certain conditions, particularly when combined, can account for the rapid growth of numerous large-scale bubbles.

In the first phase, narrating a crisis, powerful market actors are largely aligned in their exposition of negative narratives and view overregulation and business constraints as critical impediments in the economy. In the second phase, narrating a recovery, the dominant narratives tend to view continued deregulation as an economic enabler and the possibility of stricter regulations as a dangerous impediment, while normative texts start to produce increasingly positive narratives over time. In the third and final phase, narrating a boom, powerful market actors, particularly from the more prudent and powerful cognitive and regulative pillars, expound increasingly positive and optimistic narratives, while a range of alternatives to fundamental analysis start to dominate discourse.

If all of these conditions are met, the theory predicts that several outcomes will follow. First, they will result in the creation and maintenance of a number of reinforcing institutions such as deregulation, privatization, lowered rates, expanding credit, and lowered taxes that will support and boost asset prices, particularly in the sector viewed as driving economic recovery.

Second, calls for stricter regulations will be ignored and crowded out, while market skeptics will easily be discredited and disparaged. Third, a large number of investors, including a flood of newcomers, copycats, and swindlers, will be directed into increasingly similar investment decisions, which will require increasingly greater leverage and result in increasingly emotional and irrational decision-making.

Each phase of this theory is explained in detail in the subsections below, with each subsection exploring the linkages between narratives and actions/events and vice versa. The following subsections also provide a few examples of the conditions mentioned above. Table 10.1 on the following page provides an overview of each phase and its respective narratives and direct and indirect results.

Table 10.1 Overview of the narrative theory of asset bubble formation

Phase	Description	Dominant narratives	Direct actions/results	Indirect actions/results
Phase 1: Narrating a crisis	• Powerful market actors expound negative narratives • Regulations and constraints viewed as impediments • Over time, negativity and attention to crisis recedes • Boom narratives very rare	• Decline • Crisis/turbulence • Competitiveness • Abuse/unfairness • Uncertainty • Myopia • Stability	• Reinforcing institutions to allay crisis • Central banks lower rates • Deregulation/privatization • Negative bubbles emerge	• Investors forced back into riskier assets • New markets, companies, and business opportunities appear • Quick gains can be reaped by risk-takers
Phase 2: Narrating a recovery	• Market actors expound mixed/balanced narratives • Deregulation viewed as enabler, while strict reg. viewed as impediment • Over time, narratives become increasingly positive • Collective boom narratives emerge	• (Moderate) growth • Cycles • Soundness • Expansion • Recovery	• Strict regulations abandoned/loosened • Increased deregulation and government assistance • Asset values rise • Skeptics emerge	• Risk-taking increases • Copycats and newcomers start to emerge • Deregulation feedback loop • Skeptics disparaged
Phase 3: Narrating a boom	• Powerful market actors expound positive narratives • Fundamental valuations replaced with range of alternatives • Over time, narratives become increasingly exuberant • Boom narratives now institutionalized	• Structural shift • New era • Dominance • Leadership • Soaring prices • Revival • Explosive growth • Transformation	• Legislation passed to boost economic drivers • Rates kept low/lowered • Skeptics discredited • Asset values soar	• Flood of copycats and newcomers • Skeptics recede • Borrowing surges/savings collapses • Asset price feedback loop • Illegal activity now common

Lastly, it is necessary here to mention what the theory is not, so as not to confuse readers. As the narrative theory is highly grounded in the events of the U.S. tech bubble, it is first and foremost a theory of how narratives drove speculation during one of the largest and most important bubbles in recent history. As such, the theory should also provide an accurate description of how other large-scale bubbles during technological transitions may have occurred in the past and could occur in the future. That is not to say that all bubbles of this kind have followed or will follow the same process. With each bubble being deeply rooted in its prevailing social, cultural, and political climate, some of these episodes are likely to form in both predictably and unpredictably different ways. It follows that bubble episodes not of this kind, such as bubbles in precious metals, may potentially form under very different conditions.

All of that being said, it is my intention that this theory will enable researchers, policy makers, and practitioners to better understand, predict, and prevent all large-scale bubbles. In Sections 10.2 and 10.3, I further explain how this can be accomplished along with how future studies can start to test, clarify, extend, and build upon what is proposed in this thesis.

10.1.1 Phase 1: Narrating a crisis

Perhaps counter-intuitive to most, the first narrative phase in which some large-scale asset bubbles form is one of crisis. The central argument is thus that when market actors, particularly those with profound institutional power, narrate a crisis, they may in fact be sowing the very seeds of a future bubble.

The term "crisis" is meant to be understood rather broadly. While the term includes the typical large-scale economic crises of stock market crashes, banking collapses and panics, dramatic drops in trade, and severe, prolonged recessions and depressions, I intend for the term to also refer to more subtle forms of crises such as an extended period of high unemployment, an extended or rapid loss of competitiveness to other countries, various forms of social strife and tension, or simply just a nationwide loss of confidence. In the case of the tech bubble, the period of 1987 to 1992 included several of these events, such as the 1987 stock market crash and a recession in the early 1990s. The contention here is that large-scale bubbles form not because of the type of crisis a nation may be facing, but rather they form because of how market actors narrate, and hence make sense of, a crisis.

Two conditions in this first phase, as revealed through my data, help to explain how an asset bubble can eventually emerge. First, market actors, again particularly those with high levels of institutional power such as central bank governors and chairmen, government representatives, and journalists at the nation's premier news outlets, give increased attention to the economy and its

markets and expound negative narratives that view the economy, its markets, and its companies in a state of crisis, turbulence, decline, uncertainty, and/or myopia. Abuse and unfairness are likely to be highlighted, while calls for greater stability and economic competitiveness abound. Certain sectors, such as the tech sector in the late 1980s and early 1990s, will be singled out as examples of the nation's decline. While some positive narratives may be present, these narratives will have little influence against a near or complete alignment of the cognitive, normative, and regulative aspects of the institutional realm.

The second condition is related to the dominant impeding forces present in these narratives. If a loss of trust in the markets and widespread corporate fraud are identified as the sole culprits of the crisis, then stricter regulations are likely to follow and a large-scale bubble is unlikely to form anytime soon. Such elements were at least partially present during the Great Depression, which led to the introduction of Glass-Steagall in 1933. However, if the dominant narratives of the time identify overregulation and burdensome constraints on business as primary impeding forces, then deregulation, privatization, and lower taxes are likely to follow. During the tech bubble, complaints of burdensome regulations became exceedingly common from the late 1980s well into the early 1990s, while calls for stricter regulations, though present, became exceedingly sparse.

As a result of these two conditions, being the institutional alignment of negative narratives and the identification of overregulation and constraints as key impeding forces, powerful market actors are likely to respond with a range of reinforcing measures to help businesses expand and grow, thereby allaying the current crisis. Common measures include the lowering of interest rates, which dropped from nine percent to three percent in the early 1990s, deregulation and privatization, which can create entirely new business opportunities, and the lowering of various taxes. For these conditions, it can easily be inferred that the greater the power possessed by regulative and cognitive sources, the greater the power and influence of their narratives.

Following these measures, investors are both forced and encouraged back into riskier assets, such as stocks and real estate. As asset values may have dropped below fundamental valuations during the crisis, resulting in negative bubbles, risk-taking investors (sometimes referred to as "vultures") can reap quick gains at this point, as prices are likely to rebound rather quickly after such measures are taken. Such quick gains are also likely to attract the attention of normative texts, thereby encouraging similar actions and invoking notions that nations "always recover" from crises. While such gains may also result in a handful of boom narratives predicting an immediate economic revival, these opinions remain in a very small minority and hence have little institutional influence.

At the end of this phase, fears of a deeper crisis subside and attention to markets starts to recede. Attention shifts from focusing on the crisis to focusing on competitiveness. At this point, a large-scale asset bubble is certainly not imminent, nor is one guaranteed to arise. However, the seeds of lowered rates, expanding credit, deregulation, and privatization have been sown. How market actors continue to narrate and respond to unfolding events will determine how dangerous these reinforcing conditions will be.

An important distinction can be made here, namely that this theory views an excessively negative reaction to a crisis as the primary cause of, what at times can be, excessive efforts at expanding credit and deregulation, which can then be important causes of excessive lending, speculation, and expansion. For instance, the stagflation of the 1970s in the U.S. is noted as resulting in a "national moroseness" (Morris, 1999, p. 94), which was immediately followed by a wave of deregulatory efforts, which was then followed by a series of bubbles, culminating in the 1987 market crash.

10.1.2 Phase 2: Narrating a recovery

Equally as important in determining whether a large-scale bubble will form is the second narrative phase, narrating a recovery. In this phase, market actors can all but ensure a bubble will form if the dominant narratives of the time meet two new conditions.

First, the dominant narratives of this recovery period, which was from 1993 to 1995 during the tech bubble, are likely to be largely neutral and mildly positive in their tonalities and include narratives of (moderate) growth, economic and business cycles, soundness in investments and institutions, expansion, and recovery. Concomitantly, attention to markets will drop off somewhat at regulative sources, while cognitive texts will produce cautious assessments of an economic rebound. As the economy and various sectors are still recovering, the impeding and enabling forces identified play a critical role. In this regard, the first condition that can further boost asset values is when the dominant recovery narratives of the time view the previous efforts at deregulation and business expansion as key enablers in the recovery but also view efforts at stricter regulation as major impediments.

If such a condition is met, three results are likely to follow. First, continued calls by expounders of narratives of abuse and unfairness for stricter regulations to punish those guilty for the past crisis and prevent further crises will receive decreased attention and seemingly fall on deaf ears. As the economy is still viewed as in a precarious and fragile state, stricter regulations will be viewed as dangerous and even unnecessary measures, for a recovery is already in process. Second, powerful

market actors, primarily regulative and cognitive ones, will continue to push for deregulation and increased assistance at business expansion. The new enablers of this recovery are the likeliest to receive such assistance. In the case of the tech bubble, venture capitalists were quickly identified as enablers of a resurgent tech sector, and hence they quickly became the focal point of senate proposals.

A third result, as just mentioned, is that asset values will rise, particularly those most directly related to the new measures at expansion. Government efforts at deregulation and possible further easing by central banks encourage and create investment and, increasingly, speculation in the sectors viewed as receiving the most support. A potentially dangerous feedback loop emerges here as deregulation and credit expansion can result in immediate investment and speculation, which can lead to a quick spike in asset values, which can convince powerful market actors that those measures are working, resulting in further calls for deregulation and expansion.

The corollary to this first condition is that if the dominant narratives of a recovery view efforts at deregulation and expansion as having achieved their goals and stricter regulations as necessary to deter and prevent further crises, then regulations will be tightened, expansion will be eased off, rates may be put on hold or even rise slightly, speculation will be subdued, and, consequently, asset values are likely to rise only modestly—if at all. Such results would all but ensure a large-scale bubble does not form in the near future.

This first condition, as powerful as it may be in promoting investment and inciting speculation, will likely prove insufficient in creating any sort of large-scale bubble, particularly in societies with powerful and influential normative texts. This leads us to the second condition, which postulates that asset prices can be further boosted if normative texts produce increasingly positive narratives over time.

Normative texts, such as media articles and shows, blogs, forums, and even word-of-mouth hearsay and advice, are the likeliest to give first attention to new trends and fashions. In the tech bubble, media texts gave increased coverage to the tech sector far earlier than cognitive and regulative sources. Boom narratives started to become more common in the early years of the recovery, but media texts also produced a number of early skeptics who doubted the sustainability of the rise in asset values and the fundamental factors supporting the recovery. At this delicate point, if skeptics start to outnumber optimists, then retail investors and potential copycats will be put off the latest trend. However, if, as in the tech bubble, optimists slowly start to grow in number and boom narratives become collectively shared amongst large communities, particularly at highly

influential normative sources such as premier news outlets and widely watched TV shows, a growing asset bubble starts to look like a near certainty.

The overall argument from this phase is thus that if market actors, particularly those with high levels of institutional power, view increased expansion as an enabler and stricter regulations as an impediment and produce normative texts that are increasingly positive over time, an institutional reality starts to coalesce that directs a large number of speculators, newcomers, and copycats to make increasingly similar investment decisions. Indirectly, such decisions provide a further boost to asset values, and normative skeptics can quickly be discredited for any short-term predictions. Following this first rush of excitement, economic indicators are likely to turn positive, resulting in increased attention to markets and the new driving force of business growth from cognitive and regulative sources. By the end of this phase, boom narratives of leadership, dominance, and a new era start to emerge, with experts and their increasingly matter-of-fact rhetoric further legitimizing such ideas. Further fueling the flames of speculation, normative texts can now easily report on numerous examples of rising fortunes in this new and exciting sector, leading to feelings of jealousy, envy, and fear of missing out and enticing newcomers to begin borrowing to leverage their future gains.

At the end of this phase, high valuations and predictions of continued gains for certain assets, especially the new drivers of the economic recovery, are very likely. The important distinction at this point is that the three pillars of institutionalization must start to work in unison and become mutually supportive of one another. If normative texts begin to doubt cognitive or regulative sources, or if regulative and cognitive narratives result in tighter credit conditions, then a large-scale bubble becomes increasingly unlikely. For example, as documented by Garber (2000), both the South Sea Company and the Mississippi Company were well supported by discourse from government officials at extremely high levels of institutional power. But also meeting the second condition, accounts also remark on how John Law's exaggerations of the wealth in The New World and news of the fortunes made in his scheme reaching England influenced the public to pour their savings into such schemes (Bammer, 2002; Sheeran and Spain, 2004).

10.1.3 Phase 3: Narrating a boom

The final narrative phase of asset bubble formation, narrating a boom, determines how large a bubble grows. By the beginning of this phase, circa 1996 in the tech bubble, a small-scale or brief bubble is almost certain to occur, for too much institutional momentum is supporting the valuations of certain assets. However, this institutional momentum can still be reversed, thus pricking the

bubble, or it can be accelerated, with boom narratives now becoming fully institutionalized and serving as the taken-for-granted context by which investors make decisions. Three conditions can allow this acceleration to enter full force.

First, despite asset prices beginning to surpass most common fundamental measurements, the reputedly more prudent yet commonly more powerful cognitive and regulative pillars continue to expound a majority of positive and optimistic narratives, with boom narratives of a structural shift, new era, dominance, leadership, soaring prices, revival, explosive growth, and/or transformation dominating discourse.

As long as these narratives continue to dominate discourse at these high and influential levels of institutionalization, ceteris paribus, a few results are likely to follow. First, with optimism over the future continuing to dominate rhetoric, any claims of euphoria or the possibility of a bubble will receive little attention. Such was the case with the (less institutionally powerful) speeches of Alice Rivlin and Laurence Meyer during the tech bubble. As a result, policy makers and banking officials will see very little, if any, need to prick a bubble, for one seemingly does not even exist. Second, with no bubble in sight, legislation may continue to boost the new drivers of economic growth, such as the tech sector was supported well into the late 1990s. Third, again with a bubble appearing a remote possibility, interest rates are more likely to remain low or only inch upwards. Furthermore, central banks can reserve the option to further lower rates at the first sign of economic hardship, as happened after the Russian and LTCM fiasco in the late 1990s, or disappointingly low inflation numbers. All of these actions, particularly in combination, will continue to boost asset values.

As in the previous phase, the normative pillar continues to play a very important role in the creation of institutional reality. That being, at this point, while a large-scale bubble becomes almost a certainty, normative texts can still dampen the speculation by expounding narratives critical of asset values and the institutions supporting those valuations. However, if at this point normative texts continue to discredit skeptics and produce a majority of positive narratives, then institutional reality for investors will becoming overwhelmingly, and inescapably, optimistic about continued gains. Investors, both large and small, old and young, institutional and retail, will be left with no choice but to place bets on further economic gains and higher valuations in the new driver of this growth.

With the institutional pillars fully aligned and easy credit and regulations supporting the economy, asset prices can now easily reach historic values. Skeptics, while still present, may recede, partially out of fear of further embarrassment. A flood of newcomers and copycat organizations will enter the market, all trying to make easy money by mimicking the bets being made in the

marketplace. With gains appearing so easy, borrowing surges and savings collapses. At this time, a very dangerous asset price feedback loop enters full swing, with increased borrowing and speculation further fueling price gains, which in turn creates narratives of these gains, which can then fuel further speculation.

It is also at this point that illegal activity in the market becomes increasingly common. Swindlers and the less scrupulous of society cannot resist the easy gains to be made by simply doctoring up financial statements and making promises that they cannot keep. Many of these swindlers, along with the more seasoned institutional investors, know that the market is already stretched, but they also know that a continued flow of new entrants can prop up valuations. The increasingly positive narratives at the regulative pillar also ensures these criminals are less likely to be pursued, at least for the time being.

While these two conditions may seem sufficient in inflating the largest of bubbles, there remains the tricky issue of how to support claims that prices, despite their historic heights, are not in a bubble and are in fact reasonable valuations of the new driver of economic growth. While fundamental measurements, such as profit statements and rental gains, offer no support, a range of alternatives to fundamental analysis must start to dominate discourse in order to sustain the euphoria and excitement of this new growth. As identified in this thesis, these alternatives can take on many forms, including claims of a profound, structural shift in the economy, unequivocal language, emotional triggers such as envy and fear, rationalizations of conflicting evidence, a range of expert references (though primarily market insiders), carefully selected historical data, and pure market idolatry. These reinforcing alternatives, while likely insufficient and arguably even childish in isolation, can seduce even the most cautious investors. Their continued promulgation drowns out random cries of a bubble and market euphoria and markets become increasingly emotional and irrational. Such was the state in 1999 and 2000 during the tech bubble, when valuations of inexperienced startup firms with no profits and paltry revenue streams reached meteoric levels.

Eventually, the bubble reaches such levels that valuations are supported by no more than the airy narratives behind them. At this final stage, as numerous insiders and perceptive investors know that markets cannot take any more, even a modest rise in interest rates can send markets swinging wildly in reverse, with negative, reactionary discourse further inciting a stampede out the door.

10.2 Implications for researchers, policymakers, and practitioners

The narrative theory of asset bubble formation, as developed through an in-depth study of the U.S. tech bubble, has several implications for research, policy, and business practice. Perhaps most

obvious is that this narrative theory offers a novel and detailed description of how large-scale bubbles can form, particularly during technological transitions. Through attention to both narratives and events and sensitivity to the longitudinal processes and interrelationships in these phenomena, this theory also offers a new and nuanced understanding of how bubbles form, an understanding that complements, integrates, and challenges existing thought on these episodes.

An important insight gleaned from this study that is largely ignored in extant theory is the role and importance of narratives and actions during a crisis and recovery. Much of extant theory focuses almost solely on the decisions, actors, and events during the boom years immediately preceding a market crash, but the findings of this study demonstrate just how influential the crisis and recovery years can be. The argument of the narrative theory is such that without the reinforcing institutions of low rates, deregulation, privatization, low taxes, abandonment of proposed regulations, and extended government assistance, the tech bubble could not have reached such frenzied heights. All of these conditions, along with the practice of discrediting and disparaging market skeptics, were direct results of narratives and sense-making efforts during the crisis and recovery years preceding the tech boom. Thus, a first implication of this study is that future studies and future theory on these events must account for the narratives and actions that occur well before market euphoria kicks in.

It should be noted here that a few current theories do give some attention to the recovery phase. Most prominent amongst these is Minsky's (1986, 1992) now well-cited theory that overconfidence arises during long periods of stability, which in turn encourages excessive risk-taking and innovation. The findings of my study support such a conclusion, but also demonstrate how it is incomplete. The narratives and decisions made during a period of crisis can have profound implications for the conditions that exist during a recovery, thus the argument that bubbles arise during periods of stability will, in many cases, only tell part of the story.

A second important insight is the highly influential and, arguably, surprising role that cognitive and regulative texts played in the growth of the tech bubble. After a bubble bursts, a common accusation is that the media is to blame for hyping the asset, frequently stocks or housing. Several studies and prominent scholars have even offered support for such a conclusion (e.g., Akerlof and Shiller, 2009; Bhattacharya *et al.*, 2009; Hartz and Steger, 2010; Shiller, 2005). Again, while my findings show how such an observation is not entirely wrong, the remarkably one-sided narratives at the institutionally powerful U.S. Federal Reserve and U.S. Senate during the tech bubble, alongside the relatively balanced rhetoric in the media—particularly concerning stock valuations—

strongly suggests that the media and other normative sources may in fact be the most balanced component of institutional discourse during these events.

In relation to mainstream economic explanations of these events, the findings of this study offer a clear and detailed account of just how seldom fundamental factors were used to support claims of rising asset values during the tech bubble. In the sampled texts, rising valuations were supported by vague and passing notions of a structural shift in the economy, amazingly matter-of-fact language, emotionally charged statements, simple and unsupported rationalizations of evidence to the contrary, anecdotal claims from market insiders, biased and partial data representations, and even reverence to market officials and the abstract markets themselves. These examples, especially in combination, add to the mounting pile of evidence demonstrating how pure fundamentals and rationality do not drive decision-making during bubble episodes.

That is not to say that all mainstream economists need to abandon ship before their fundamental theories of market speculation sink in a rising sea of irrationality. In fact, in light of my findings, some mainstream theories do seem to hold some weight. The first such theory is the possibility and extent of rational speculators (Akerlof *et al.*, 1993; Brunnermeier and Nagel, 2004; DeLong *et al.*, 1990; Doblas-Madrid, 2012; Flood and Hodrick, 1990; Griffin *et al.*, 2011). The findings of my study demonstrate that it could actually be rather easy for all kinds of investors to anticipate and knowingly participate in a bubble's growth. Immediately preceding the euphoric years of the tech bubble, the growing stream of both narratives and reinforcing institutions supporting the U.S. economy and its technology sector offered clear signals that tech stocks would be buttressed and thus resilient to small shocks, such as the crisis in Southeast Asia. There is also evidence to suggest that institutional investors such as hedge funds and mutual funds had considerable influence on stock prices during the late 1990s (Griffin *et al.*, 2011).

Hence, in the tech bubble and likely in other similar types of large-scale speculative events, it appears very possible that rational speculators play a role in driving up prices. The evidence from my study, however, demonstrates how such speculation could only be one part of a much bigger picture. The narrative evidence in this thesis suggests that such speculators—rather than creating the tech bubble—simply took advantage of institutional conditions that offered strong, artificial support for tech stocks. Without such conditions, their ability to manipulate stock prices would have been greatly reduced, if not entirely muted.

Another mainstream theory with relevance to my findings is the notion of "sunspots" (see, e.g., Azariades, 1998), where extrinsic factors are widely and mistakenly relied upon to assess asset values. The relevance of this theory to the tech bubble is the finding of increasingly optimistic, and

seldom contested, narratives concerning the U.S. economy, where narratives of a structural shift, new economy, and economic leadership, for example, went almost entirely unchallenged during the late recovery and boom phases of this event. The discourse around these narratives can be contrasted with that concerning stock prices at the same time, where actors, particularly in the normative realm, did in fact challenge or at least question the euphoria over tech companies. However, amidst a harmonious chorus of economic euphoria, such skepticism was increasingly drowned out.

Hence, with so much uncertainty over the future performance of numerous untested tech start-ups, investors clearly responded to the growing optimism over the U.S. economy and the transition to a profoundly different economic era. Such a transition was erroneously considered unquestionable support for constantly rising stock prices. The lack of debate over this transition and the economic implications of this transition is an interesting area in need of further research.

As with suspicions of rational speculators, though, the notion that sunspots fueled the tech bubble is not supported by my findings. As explained in the narrative theory, a wide range of actors and conditions coalesced to create the necessary institutional reality that offered seemingly relentless support for the tech sector in the late 1990s. The widespread belief in a new, structurally changed U.S. economy certainly played a role in the fevered rush to buy tech stocks, but this belief is far from sufficient to propel valuations of unproven tech firms to such historic heights.

The findings of this study and the narrative theory developed in this chapter also serve to integrate and complement fragmented theories from behavioral and sociological disciplines, thus providing a much more comprehensive understanding of these events. Of greatest relevance, the narrative theory offers a much more complete account of how herd behavior (De Martino *et al.*, 2013; Galariotis *et al.*, 2015; Hommes *et al.*, 2008; Kindleberger and Aliber, 2011; Roy and Kemme, 2012; Schoenberg and Haruvy, 2012) emerges. According to the narrative theory, critical conditions in the emergence of herd behavior include the reinforcing institutions created as a result of narratives during the three phases of a bubble's formation, the narratives expounded in institutionally powerful normative texts (particularly the reporting of fortunes being made in the new sector driving economic growth), and the numerous alternatives to fundamental analysis that come to dominate discourse. These factors help to answer questions concerning how herd behavior is even possible in the first place, before our human inclinations take over.

As the real world of investing is vastly different from the controlled experiments conducted within university walls, the question that must be asked from such experiments is how precisely do investors come to predict and mimic the behavior of others, especially when fundamental valuations

are difficult or impossible to obtain. In the case of the tech bubble, the findings of this study show that such predictions and mimicry can be rather straightforward and, eventually, almost impossible to prevent.

As outlined in the narrative theory, starting with the crisis phase of an asset bubble, traders can start to predict the moves of other investors. In such a phase, when powerful market actors start to expound views that overregulation and constraints are impeding economic recovery, traders can start to anticipate an environment with lower rates and deregulated and privatized sectors. Additionally, the specific sectors mentioned in such narratives, such as the technology sector in the late 1980s and early 1990s, can be predicted to receive the most assistance. As low rates hurt savers, investors will also start to anticipate the movement of funds from savings accounts into riskier assets such as stocks and real estate.

Confidence in such predictions will likely grow stronger in the recovery phase of an asset bubble, when further deregulation and the abandonment of strict regulations are announced. Furthermore, as the new drivers of economic growth are repeatedly praised in institutional texts, investors can now easily anticipate where government assistance will be allocated. Lastly, in the boom phase of a bubble, predictions and mimicry can appear all too tempting. The now widespread institutional promulgation of increasingly similar boom narratives and a bevy of claims supporting the new drivers of economic growth allow, and now likely compel, investors and speculators to mimic bets of the now-rich first movers.

In relation to this thesis, an interesting finding of almost all behavioral experiments on asset bubbles is that traders (participants) tend to bid up prices well beyond fundamental valuations even without (most of) these institutional conditions present. Clearly, once investors, arguably with these same natural tendencies, are placed in an institutional environment of overwhelming optimism and support for one or a few key sectors, the possibility of herd behavior turns into a near certainty.

As detailed in Chapter 2, a recent spate of sociological studies largely focus on institutional and regulatory failures during these events (e.g., Abolafia, 2010a; Campbell, 2010; Davis, 2010; Engelen *et al.*, 2012; Hirsch and Morris, 2010). As already explained, the narrative theory offers a more complete account of how and why institutional measures and regulations tend to reinforce one another during boom years. Thus, future studies in this area would benefit by offering a more historical account of the passing of such regulations, such as by taking into consideration motivations for economic recovery and expansion and the fear of deeper economic contractions (for an example of how this can be accomplished, see Hansen, 2014). As with the behavioral studies above, though, my findings demonstrate how such regulatory explanations remain incomplete. The

normative and cognitive aspects of increasing euphoria during asset bubbles are far too powerful to be left for footnotes or afterthoughts.

As the narrative theory of asset bubble formation emphasizes the role that cognitive and regulative sources play in these events, several direct implications arise for economic policy. First, policy makers, especially at high levels of institutional discourse and power, must take great care during the crisis and recovery phases not to exaggerate economic hardship and overemphasize the reinforcing institutions of low rates, deregulation, privatization, low taxes, government assistance, and the abandonment of stricter regulations to prevent future crises. While such narratives and measurements certainly draw attention to imperative economic matters and may help to allay the crisis in the near term, policy makers may in fact be sowing the seeds of a future, even bigger, crisis during these early years.

Perhaps the most realistic advice here is that policy makers should be cautious during economic recoveries when policies and proposals tend to all support the same or similar drivers of economic growth. While such measures will more than likely have an immediate effect and boost economic indicators, these drivers—such as the tech sector during the 1990s—are likely already well supported by a range of normative texts and hence already in danger of overheating.

For practitioners, including investors, business owners, and managers, the narrative theory should offer a useful blueprint of how speculative events can coalesce and grow over time. Such a blueprint should assist such actors in avoiding the perils of investments just before and during market peaks. Ideally, the narrative theory developed in this thesis will alert practitioners to the common signs of a bubble forming and growing, resulting in increasingly wary decision-making during such events, and thus helping to dampen the excesses seen in bubbles of recent history.

Unfortunately, if powerful institutional actors such as central bank officials and government representatives direct investment into the same or similar sectors during crises and recoveries, many practitioners will be hard-pressed to pass up an easy opportunity at quick capital gains. Such a revelation underscores the importance of institutional caution during economic recoveries.

10.3 Limitations and suggestions for future research

While the findings of this study offer strong support for the narrative theory developed in Section 10.1 and the implications mentioned above, this study also includes a few limitations that lead to several opportunities for future research in this area.

A first limitation of this study is that I was only able to investigate one bubble episode, being the U.S. tech bubble. While using a single case study design allowed for the depth and complexity revealed in my findings and theoretical constructs, it also tempers the potential applicability of my findings to other situations. There are at least three different kinds of scenarios that can be examined in this regard. First, researchers can explore how my findings compare to similar investigations of bubbles that form during similar types of technological transitions. As observed by Hong, Scheinkman, and Xiong (2008), similar speculative events have coincided with breakthroughs in railroads, electricity, automobiles, radio, microelectronics, PCs, and biotechnology. Whether future transitions will occur in genomics, nanotechnology, robotics, and the like remains to be seen.

A second type of scenario involves testing the applicability of these findings across other types of large-scale bubbles, such as housing and bond bubbles. While notions of deregulation, government assistance, normative euphoria, and the discrediting of skeptics seems to ring true to several of these events, I leave it to future studies to provide much more thorough examinations and comparisons than I could ever fit into the final pages of this thesis. A third and final type of scenario is the smaller or less publicized bubbles that tend to emerge in precious metals, emerging markets, and localized assets. While I surmise that many of the same factors and conditions are influential in these events, one can easily imagine how these bubble episodes may follow a noticeably different growth process. For instance, spikes in the price of gold can often immediately follow periods of crisis, with gold being viewed as a safe-haven asset to hold in times of uncertainty.

A related issue here is how bubbles form in countries or in time periods with fundamentally different economic institutions and discourse. Comparisons of how the neoliberal, laissez-faire discourse of the 1990s compares to incidents under more restrictive or socialist policies would be of great interest in this regard. Similarly, with the rise of program trading and the power of highly complex algorithms to move markets, future studies could develop a more nuanced view of how these changes are affecting the role and power that narratives play in such events.

A second limitation concerns data collection. Within the three broadly defined and overlapping pillars, there are surely countless sources that one could probe to identify the narratives and trends present during a certain period. What is more, within each source, samples will always need to be taken, whether by keyword, by month or year, or by some other means. Such a vast ocean of data options presents researchers with a very difficult sampling decision. In this thesis, I decided to probe, using keyword searches, the highest and most influential sources of institutional texts regarding the U.S. tech bubble. Future studies could follow a similar path to investigate other

bubbles, or scholars could probe a different or even wider range of institutional texts to test for similarities and differences. For example, relevant normative texts are almost endless, with blogs, TV shows, forums, chat rooms, and interviews representing just a few of the options.

A third limitation would be that this thesis employed a series of qualitative methods that, while allowing for more open and nuanced analysis, make research replication extremely difficult and time-consuming. This raises the possibility of using a more closed, software-based analysis procedure that allows for faster replication. Whether and how that can be accomplished, though, I will leave for future studies.

Aside from these limitations, the findings of this study and narrative theory developed as a result lead to a wide range of future research questions. As outlined in Chapter 3, the I/N perspective itself raises numerous questions about the origin and spread of boom narratives, many of which remain unanswered (see Table 3.1). Just looking at the findings of this study, numerous questions could be raised, such as "What is the precise relationship between the different pillars during these events, i.e., how exactly do they influence one another?", "How did narratives come to be markedly one-sided at the more prudent cognitive and regulative pillars?", and "What role do alternatives to fundamental analysis play outside of the boom years?". Taking the perspective a step further, scholars could also investigate to what degree the framework developed in this thesis and the findings of this study can be used to understand broader economic cycles of growth and recession.

Upon reading this thesis, more critical scholars may question to what extent the narratives examined in this study represent the true beliefs, views, and intentions of the actors involved (cf., Alvesson, 2003). In other words, the argument could be made that, for instance, government representatives were acutely aware of a tech bubble but worried that constant reference to a bubble would in fact be the very cause of its bursting and thus give them direct responsibility over such a catastrophic event. Or perhaps a more nefarious accusation would be that certain actors used their discursive power to intentionally inflate a bubble so as to benefit from its growth (similar to the contention made in theories of rational speculators).

While these arguments more than likely have a certain degree of truth to them, and hence warrant continued study, the assumptions and findings of this study serve to diminish the importance and possibility of such accusations, for several reasons. One, the primary argument behind the I/N perspective is that the output of, not intentions behind, one's institutional world is what rules and governs, incentivizes and constrains. That is to say, it is not the intentions of a regulation but rather the direct and indirect effects of a regulation that determine its institutional

force. Certainly, one can imagine a situation where government representatives argue vehemently for a certain law but in fact, perhaps deep down, feel rather confused and undecided about the whole matter. While such a scenario may have very important implications for the future, they do not make an official's narrative supporting the legislation or the eventual passing of that legislation any less effectual.

Two, in terms of the possibility of nefarious actors working to inflate and profit from a bubble's growth, the narratives revealed in this study make such an accusation very difficult to support, at least for the case studied. The tech bubble was supported by a wide range of narratives expounded from a diverse group of actors throughout its emergence, development, and growth. The theory that all of these actors, many of them holding positions requiring a cautious view of rapid asset fluctuations, conspired to produce one of the largest bubbles in recent history appears to hold no water. However, given the positions and responsibilities of various Reserve officials and U.S. Senators included in this study, an assertion that *belief* was often replaced with *hope* in their narratives may be hard to refute.

10.4 Conclusion

I began this thesis by noting the great sense of frustration felt by academics over our current understanding of asset bubbles. As asset bubbles are now becoming rather frequent and globalized catalysts of banking crises, asset misallocation, and severe social strife, the academic community must accept a certain level of blame for failing to provide an adequate explanation of events with such devastating and immediate social and economic impacts.

In Chapter 2, I underscored two oversights of extant research, being a lack of understanding as to why some assets develop bubbles while others do not and a lack of investigation into why bubbles cannot be "popped" before they reach their euphoric, and ultimately catastrophic, heights. I believe that this thesis, by probing the central yet overlooked role that narratives play in driving market speculation, offers insight in both regards.

By first investigating how boom narratives became institutionalized during the U.S. tech bubble, my findings and the narrative theory developed from those findings offer a rather comprehensive answer as to how tech stocks (as opposed to, say, housing prices) reached such frenzied heights in the 1990s. In brief, the narrative theory argues that, first, from 1987 to 1992, powerful market actors were aligned in their promulgation of negative narratives that enabled the reinforcing institutions of low rates, deregulation, and government assistance. Then, from 1993 to 1995, dominant narratives enabled continued deregulation and prevented the passing of strict regulations designed to prevent

future crises, while normative texts produced increasingly positive narratives that directed attention toward the new driver of economic growth, that being tech companies. Finally, from 1996, to 2000, market actors, particularly those from the more prudent and powerful cognitive and regulative pillars, expounded increasingly positive and optimistic narratives that kept rates low and enabled further assistance to the tech sector. At the same time, a range of alternatives to fundamental analysis started to dominate discourse, offering a relentless stream of support to the valuations of unproven tech firms.

This study also offers some preliminary insight into why efforts at deinstitutionalization, or popping the bubble, failed. In the case of the tech bubble, the answer appears rather clear. First, despite a number of early skeptics present in normative texts, these skeptics were increasingly outnumbered over time. Second, as cognitive and regulative narratives resulted in the creation of a number of reinforcing institutions, tech stocks continued to rise, thus allowing the discrediting and disparaging of those skeptics. Lastly, during the boom years, supported by a relentless stream of positive narratives and seductive alternatives to fundamental valuations, rising stock prices made skeptics look all the more foolish, causing them (or at least their rhetoric) to recede from the institutional spotlight. The most skeptical narratives to emerge at this point did not gain traction until markets had already peaked, thereby only fueling the steep falls ahead.

While this thesis provides a number of important findings and a nuanced understanding of asset bubble formation, it is by no means an exhaustive account of the complexities that underlie asset bubbles. It is my hope that this study serves as a useful foundation and inspiration for future scholars wishing to further probe the sociological origins of these rather destructive events. Only through a commitment to research that is both rigorous in its analysis and novel in its design can we hope to stay one step ahead of (as opposed to our current two steps behind) the mysteries of market speculation.

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APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
1	Heller, Mar. 6, 1987	H. Robert Heller	March 6, 1987	Future directions in the financial services industry: The international markets	Washington, D.C.	Nat'l conf. co-sponsored by Georgetown Law Center and School of Bus. Admin.
2	Heller, May 9, 1988	H. Robert Heller	May 9, 1988	The internationalization of world financial markets—It's a small world	San Francisco, California	1988 Financial Analysts Federation Annual Conference
3	Heller, Sept. 19, 1988	H. Robert Heller	Sept. 19, 1988	Reform and integration of world financial markets	Washington, D.C.	Presidential Leadership Summit
4	Greenspan, Oct. 11, 1988	Alan Greenspan	Oct. 11, 1988	Innovation and regulation of banks in the 1990s	Honolulu, Hawaii	American Bankers Association
5	Heller, Oct. 25, 1988	H. Robert Heller	Oct. 25, 1988	Managing money in volatile markets	Cromwell, Connecticut	Connecticut Institute for Certified Financial Planners
6	Angell, Nov. 2, 1988	Wayne D. Angell	Nov. 2, 1988	A prop. to rely on market interest rates on intraday funds to reduce pay. system risk	Washington, D.C.	1988 CATO Institute Conference
7	Heller, Nov. 2, 1988	H. Robert Heller	Nov. 2, 1988	Governing banking's future: Markets versus regulation	Washington, D.C.	CATO Conference on Banking Regulation
8	Greenspan, Nov. 30, 1988	Alan Greenspan	Nov. 30, 1988	Implications of global economic integration on equity markets	Boca Raton, Florida	Annual Convention of the Securities Industry Association
9	Angell, Sept. 4, 1989	Wayne D. Angell	Sept. 4, 1989	Mon. policy in a centrally planned econ.: Restruct. tow. a market-orien. soc. system	Moscow, U.S.S.R.	The Institute of the U.S.A. and Canada
10	Greenspan, Oct. 10, 1989	Alan Greenspan	Oct. 10, 1989	Commercial banks and the central bank in a market economy	Moscow, U.S.S.R.	Spaso House

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
11	Greenspan, May 2, 1990	Alan Greenspan	May 2, 1990	Regulation of futures and options markets	Washington, D.C.	Commodity Futures Trading Commission and the Futures Industry Institute
12	Angell, May 14, 1990	Wayne D. Angell	May 14, 1990	Cooperative approaches to reducing risks in global financial markets	New York, N.Y.	Conference on Regulating International Financial Markets: Issues and Policies
13	Angell, May 23, 1991	Wayne D. Angell	May 23, 1991	Financial market integration in a global economy: A central bank perspective	Tokyo, Japan	Third Annual Tokyo International Finance Symposium
14	Greenspan, Sept. 24, 1991	Alan Greenspan	Sept. 24, 1991	Fundamental role of contract law and the supervision of markets systems	Washington, D.C.	16th Annual Conference of the International Organization of Sec. Comm.
15	Kelley, May 4, 1992	Edward W. Kelley, Jr.	May 4, 1992	The return to capital markets of selected Latin American countries	San Salvador, El Salvador	XXIX Meeting of the Governors of Central Banks of the American Continent
16	Greenspan, Nov. 18, 1992	Alan Greenspan	Nov. 18, 1992	The state of bank loan markets and related banking issues	New York, N.Y.	55th Annual Dinner of the Tax Foundation
17	Greenspan, May 25, 1993	Alan Greenspan	May 25, 1993	The transition of centrally planned economies to a market-based system	Dallas, Texas	Management Briefing of the Edwin L. Cox School of Business, SMU
18	Phillips, Feb. 24, 1994	Susan M. Phillips	Feb. 24, 1994	Capital market innovations in the fixed income markets	Orlando, Florida	14th Annual Bond Conference of the Fixed Income Analyst Society, Inc.
19	Greenspan, Mar. 3, 1995	Alan Greenspan	March 3, 1995	Changes in global financial markets and their implications for public policy	Coral Gables, Florida	Financial Markets Conference of the Federal Reserve Bank of Atlanta
20	Greenspan, April 11, 1995	Alan Greenspan	April 11, 1995	Challenges for central banks: Global finance and changing technology	Stockholm, Sweden	Annual Monetary Policy Forum

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
21	Phillips, April 23, 1995	Susan M. Phillips	April 23, 1995	Derivatives, technology, and challenges ahead	San Antonio, Texas	Conference of State Bank Supervisors
22	Greenspan, May 11, 1995	Alan Greenspan	May 11, 1995	Financial innovations and the supervision of financial institutions	Chicago, Illinois	31st Annual Conference on Bank Structure and Competition
23	Kelley, Aug. 23, 1995	Edward W. Kelley, Jr.	Aug. 23, 1995	Fostering strong financial markets through prudential supervision	Buenos Aires, Argentina	Pan-American Conference on Banking Supervision
24	Greenspan, Feb. 5, 1996	Alan Greenspan	Feb. 5, 1996	Technology and the economy	Washington, D.C.	National Governors' Association
25	Greenspan, Mar. 18, 1996	Alan Greenspan	Mar. 18, 1996	Technology and the financial economy worldwide	New Orleans, Louisiana	New Orleans Forum
26	Greenspan, May 2, 1996	Alan Greenspan	May 2, 1996	Banking regulation and technology	Chicago, Illinois	32nd Annual Conference on Bank Structure and Competition
27	Greenspan, June 6, 1996	Alan Greenspan	June 6, 1996	Technological change and the economy	Chatham, Massachusetts	40th Economic Conference of the Federal Reserve Bank of Boston
28	Greenspan, Oct. 7, 1996	Alan Greenspan	Oct. 7, 1996	U.S. Treasury securities market: Lessons from Alexander Hamilton	New York, N.Y.	Annual Public Service Awards Dinner of the Public Securities Association
29	Greenspan, Oct. 16, 1996	Alan Greenspan	Oct. 16, 1996	Technological advances and productivity	New York, N.Y.	80th Anniversary Awards Dinner of The Conference Board
30	Greenspan, Nov. 18, 1996	Alan Greenspan	Nov. 18, 1996	Banking in the global marketplace	Tokyo, Japan	Federation of Bankers Association of Japan

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
31	Phillips, Nov. 25, 1996	Susan M. Phillips	Nov. 25, 1996	Supervisory and regulatory responses to financial innovation and industry dynamics	Washington, D.C.	Seminar on Regulatory Policy Changes, sponsored by Bank Admin. Institute
32	Greenspan, April 12, 1997	Alan Greenspan	April 12, 1997	The evolution of banking in a market economy	Arlington, Virginia	Annual Conference of the Association of Private Enterprise Education
33	Greenspan, May 1, 1997	Alan Greenspan	May 1, 1997	Technological change and the design of bank supervisory policies	Chicago, Illinois	Conf. on Bank Structure and Competition of the Fed. Reserve Bank of Chicago
34	Greenspan, June 10, 1997	Alan Greenspan	June 10, 1997	The embrace of free markets	New York, N.Y.	Woodrow Wilson Award Dinner of the Woodrow Wilson Intl. Center for Scholars
35	Greenspan, Sept. 12, 1997	Alan Greenspan	Sept. 12, 1997	Education, technology, and economic growth	Chapel Hill, N.C.	Building Dedication Ceremonies at the Kenan-Flagler Business School, UNC
36	Meyer, Sept. 12, 1997	Laurence H. Meyer	Sept. 12, 1997	Monetary policy and the bond market: Complements or substitutes?	Washington, D.C.	Fixed Income Summit of PSA The Bond Market Trade Association
37	Greenspan, Oct. 5, 1997	Alan Greenspan	Oct. 5, 1997	Technological change and the economy	Boston, Massachusetts	Annual Convention of the American Bankers Association
38	Greenspan, April 2, 1998	Alan Greenspan	April 2, 1998	The ascendance of market capitalism	Washington, D.C.	Annual Convention of the American Society of Newspaper Editors
39	Greenspan, July 10, 1998	Alan Greenspan	July 10, 1998	The implications of technological changes	Charlotte, N.C.	Charlotte Chamber of Commerce
40	Greenspan, Sept. 4, 1998	Alan Greenspan	Sept. 4, 1998	Question: Is there a new economy?	Berkeley, California	Haas Annual Business Faculty Research Dialogue

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
41	Meyer, Sept. 18, 1998	Laurence H. Meyer	Sept. 18, 1998	Recent developments in banking and financial markets	Knoxville, Tennessee	Financial Institutions Center, University of Tennessee
42	Ferguson, Feb. 25, 1999	Roger W. Ferguson, Jr.	Feb. 25, 1999	Evolution of financial institutions and markets: Private and policy implications	New York, N.Y.	Money Marketeers of New York University
43	Rivlin, Mar. 1, 1999	Alice M. Rivlin	Mar. 1, 1999	Learning from financial market turbulence	Washington, D.C.	Institute of International Bankers
44	Greenspan, April 16, 1999	Alan Greenspan	April 16, 1999	Technology and trade	Dallas, Texas	Dallas Ambassadors Forum
45	Greenspan, June 2, 1999	Alan Greenspan	June 2, 1999	Trade and technology	Boston, Massachusetts	Alliance for the Commonwealth, Conference on Intl. Business
46	Meyer, June 14, 1999	Laurence H. Meyer	June 14, 1999	Market discipline as a complement to bank supervision and regulation	New York, N.Y.	Conference on Reforming Bank Capital Standards
47	Ferguson, Sept. 21, 1999	Roger W. Ferguson, Jr.	Sept. 21, 1999	Is info. technology the key to higher prod. growth in the U.S. and abroad?	Pittsburgh, Pennsylvania	2000 Global Economic and Investment Outlook Conference, CBI
48	Greenspan, Sept. 30, 1999	Alan Greenspan	Sept. 30, 1999	Trade and technology	Minneapolis, Minnesota	Minnesota Meeting
49	Greenspan, Oct. 19, 1999	Alan Greenspan	Oct. 19, 1999	Do efficient financial markets mitigate financial crises?	Sea Island, Georgia	1999 Financial Markets Conference of the Federal Reserve Bank of Atlanta
50	Ferguson, Oct. 28, 1999	Roger W. Ferguson, Jr.	Oct. 28, 1999	Financial market lessons for bankers and bank supervisors	New York, N.Y.	The Bond Market Association

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
51	Greenspan, Nov. 2, 1999	Alan Greenspan	Nov. 2, 1999	Mortgage markets and economic activity	Washington, D.C.	America's Community Bankers Conf. on Mortgage Markets and Econ. Activity
52	Greenspan, Jan. 13, 2000	Alan Greenspan	Jan. 13, 2000	Technology and the economy	New York, N.Y.	Economic Club of New York
53	Ferguson, Feb. 17, 2000	Roger W. Ferguson, Jr.	Feb. 17, 2000	The new economy: Unanswered questions for 2000	New York, N.Y.	Downtown Economists Club
54	Greenspan, Mar. 6, 2000	Alan Greenspan	Mar. 6, 2000	The revolution in information technology	Boston, Massachusetts	Boston College Conference on the New Economy
55	Greenspan, April 5, 2000	Alan Greenspan	April 5, 2000	Technological innovation and the economy	Washington, D.C.	White House Conference on the New Economy
56	Greenspan, April 7, 2000	Alan Greenspan	April 7, 2000	Technological innovation and its economic impact	St. Louis, Missouri	National Technology Forum
57	Greenspan, April 14, 2000	Alan Greenspan	April 14, 2000	Technology and financial services	Washington, D.C.	Journal of Financial Services Research and the American Ent. Inst. Conference
58	Ferguson, May 9, 2000	Roger W. Ferguson, Jr.	May 9, 2000	Conversation with leaders of the "new economy"	Portola Valley, California	New Economy Forum, Haas School of Business, Univ. of California, Berkeley
59	Meyer, June 1, 2000	Laurence H. Meyer	June 1, 2000	The roles of banks, supervisors, and the market in advancing risk management	Chicago, Illinois	Risk Management Planning Conference
60	Meyer, June 6, 2000	Laurence H. Meyer	June 6, 2000	The new economy meets supply and demand	Boston, Massachusetts	Boston Economics Club

APPENDIX 1: TECH BUBBLE COGNITIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Presenter	Date	Title	Location	Conference, etc.
61	Greenspan, July 11, 2000	Alan Greenspan	July 11, 2000	Structural change in the new economy	State College, Pennsylvania	National Governors' Association, 92nd Annual Meeting
62	Ferguson, Oct. 11, 2000	Roger W. Ferguson, Jr.	Oct. 11, 2000	Perspectives on innovation in the retail payments system	Chicago, Illinois	Workshop on Promoting the Use of Electronic Payments, Chicago Fed.
63	Ferguson, Oct. 20, 2000	Roger W. Ferguson, Jr.	Oct. 20, 2000	Information technology in banking and supervision	St. Louis, Missouri	Financial Services Conference, 2000
64	Greenspan, Nov. 20, 2000	Alan Greenspan	Nov. 20, 2000	Technology and banking	Washington, D.C.	Sixth Annual Reception for Regulators
65	Greenspan, Dec. 5, 2000	Alan Greenspan	Dec. 5, 2000	Structural changes in the economy and financial markets	New York, N.Y.	America's Community Bankers Conference

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS

No.	Citation Code	Author	Date	Title	Outlet
1	Toner, 1987	Robin Toner	Jan. 1, 1987	Oh, what the new year might bring: Rep. and Dem. take stock after a dizzying year	The New York Times
2	Reuters, 1987	Reuters	Jan. 1, 1987	Canadians start mortgage market	The New York Times
3	The NY Times, 1987	Anonymous	Jan. 2, 1987	Technology seen as a top sector	The New York Times
4	Elliott, 1987	Margaret A. Elliott	Jan. 5, 1987	Robert Prechter: The champion market forecaster	Fortune
5	Holden, 1987	Stephen Holden	Jan. 14, 1987	Stage: 'Take me along' at the equity library	The New York Times
6	Fantel, 1987	Hans Fantel	Jan. 18, 1987	SOUND: Awards cite innovations in amplifiers and tuners	The New York Times
7	Katz, 1987	Donald R. Katz	Jan. 19, 1987	Meet the prince of penny stocks: Meyer Blinder	Fortune
8	Janofsky, 1987	Michael Janofsky	Mar. 17, 1987	N.F.L. faces a new economy	The New York Times
9	Reif, 1988	Rita Reif	Jan. 1, 1988	From the sublime to locker tags, 1987 was a year for record prices despite the stock market's tumble	The New York Times
10	Flynn, 1988	Julia M. Flynn	Jan. 2, 1988	Japanese becoming a force on exchanges in Chicago: Japanese gains on Chicago markets	The New York Times
11	Anderson, 1988	Jack Anderson	Jan. 3, 1988	On the high price of awards for innovation	The New York Times
12	O'Reilly, 1988	Brian O'Reilly	Jan. 4, 1988	John Sculley growing Apple anew for the business market	Fortune
13	Holusha, 1988	John Holusha	Jan. 4, 1988	G.M. sets trade show to aid image: G.M. plans technology exhibition	The New York Times
14	AP, 1988	Associated Press	Jan. 8, 1988	Pan Am Pilots to cut wages $58 million for equity stake	The New York Times
15	Fromson, 1988	Brett D. Fromson	Jan. 18, 1988	A champion stock promoter	Fortune
16	Labich, 1988	Kenneth Labish	Feb. 29, 1988	Technology: The shootout in supercomputers	Fortune

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
17	Nasar, 1988	Sylvia Nasar	Sep. 26, 1988	Preparing for a new economy	Fortune
18	O'Toole, 1988	Patricia O'Toole	Oct. 23, 1988	The untrustworthy made simple: UNDERSTANDING THE NEW ECONOMY by Alfred L. Malabre Jr.	The New York Times
19	Maturi, 1989	Richard J. Maturi	Jan. 1, 1989	Taking stock of investment clubs	The New York Times
20	Saul, 1989	Louise Saul	Jan. 1, 1989	Helping the elderly keep their homes: Several ways to tap equity gain acceptance	The New York Times
21	Grundberg, 1989	Andy Grundberg	Jan. 1, 1989	A review of the year's innovations	The New York Times
22	Luxenberg, 1989	Stan Luxenberg	Jan. 1, 1989	Prospering as others struggle: By focusing on niches or regional markets, three restaurant chains have avoided the industry's travails	The New York Times
23	Hickspittsburgh, 1989	J. Hickspittsburgh	Jan. 1, 1989	Despite Nippon Kokan's cash and technology, National Steel remains an also-ran.: Japan slips	The New York Times
24	Brownstein, 1989	Vivian Brownstein	Jan. 2, 1989	Where all the money comes from: Cash for deals is flying in from everywhere—savings, pension funds, home equity, overseas lenders. The corporate borrowing binge does not seem too risky—yet.	Fortune
25	Sheeline, 1989	William E. Sheeline	Jan. 2, 1989	Unbundled stocks: How they work	Fortune
26	Tully, 1989	Shawn Tully	Jan. 16, 1989	Nestle shows how to gobble markets	Fortune
27	Sellers, 1989	Patricia Sellers	Aug 28, 1989	Tandem: A rose among the technology thorns	Fortune
28	Sterngold, 1990	James Sterngold	Jan. 1, 1990	Tokyo market: Now a leader: Tokyo stock market becomes the leader	The New York Times
29	McInnis, 1990	Doug McInnis	Jan. 1, 1990	Industry group formed to exploit technology developed by military	The New York Times
30	Brozan, 1990	Nadine Brozan	Jan. 2, 1990	Innovations help the neediest	The New York Times

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
31	Salpukas, 1990	Agis Salpukas	Jan. 1, 1990	Longer lives for aging cargo ships: Shipyard capacity is tight, even as freight rates increase shippers seek longer life for aging cargo ships—Companies fear the market will decline before new vessels arrive	The New York Times
32	Serwer, 1990	Andrew Serwer	Jan. 1, 1990	How to find gems in a rough bond market	Fortune
33	Stewart, 1990	Thomas A. Stewart	Jan. 1, 1990	The trouble with stock options	Fortune
34	Cowan, 1990	Alison Cowan	Feb. 16, 1990	Industrial Equity sues Cummins	The New York Times
35	Clines, 1990	Francis Clines	Apr. 27, 1990	Gorbachev urges new economy, otherwise ‘our society will die’	The New York Times
36	Hylton, 1991	Richard D. Hylton	Jan. 2, 1991	Experts were wrong: Small stocks lagged	The New York Times
37	Greenhouse, 1991	Steven Greenhouse	Jan. 1, 1991	Czechs begin shift to free market	The New York Times
38	Broad, 1991	William J. Broad	Jan. 1, 1991	Rotors and gears for tiny robots: Transforming the decade: 10 new technologies	The New York Times
39	Hamilton, 1991	Robert A. Hamilton	Jan. 6, 1991	Classroom innovations encourage students and teachers to excel	The New York Times
40	Loomis, 1991	Carol J. Loomis	Jan. 14, 1991	Money & markets: Citicorp’s world of troubles	Fortune
41	Celis, 1991	William Celis	Jan. 19, 1991	Parents sue Alabama over school financing: Seeking equity between rich and poor districts	The New York Times
42	Teitelbaum, 1991	Richard Teitelbaum	Jan. 28, 1991	Which stocks will lead when the market turns up?	Fortune
43	Kirkpatrick, 1991	David Kirkpatrick	Sep. 23, 1991	Technology: Why not farm out your computing?	Fortune
44	Dumaine, 1991	Brian Dumaine	Dec. 2, 1991	Closing the innovation gap	Fortune
45	Freudenheim, 1992	Milt Freudenheim	Jan. 1, 1992	Though markets vary, drugs work anywhere	The New York Times
46	Reuters, 1992	Reuters	Jan. 6, 1992	Tokyo stocks up sharply	The New York Times

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
47	Truscott, 1992	Alan Truscott	Jan. 6, 1992	Alvin Roth's latest book shows that he is still a pioneer after 50 years of innovation	The New York Times
48	Lloyd, 1992	Barbara Lloyd	Jan. 13, 1992	Powerful technology riding gentle breezes	The New York Times
49	Fortune, 1992	Anonymous	Jan. 13, 1992	Waste management change with the market or die	Fortune
50	Kuhn, 1992	Susan E. Kuhn	Jan. 13, 1992	A safer way to play the rally in small stocks	Fortune
51	Faison, 1992	Seth Faison Jr.	Jan. 14, 1992	Shearson suspends 2 equity executives	The New York Times
52	Solo, 1992	Sally Solo	Mar. 23, 1992	Sharp: From technology to market—first	Fortune
53	Vogel, 1993	Carol Vogel	Jan. 1, 1993	The art market	The New York Times
54	Norris, 1993	Floyd Norris	Jan. 3, 1993	Stocks are expensive, but does it matter?	The New York Times
55	Lewis, 1993	Peter H. Lewis	Jan. 3, 1993	New technology on one hand is clutter on another	The New York Times
56	Nasgovitz and Sheeline, 1993	William Nasgovitz William Sheeline	Jan. 11, 1993	Portfolio talk: Cashing in on the small-stock surge	Fortune
57	Gould, 1993	Carole Gould	Jan. 24, 1993	A shift in the role of equities	The New York Times
58	Teitelbaum, 1993	Richard Teitelbaum	Jan. 25, 1993	Companies to watch: Zebra Technologies	Fortune
59	Michaels et al., 1993	Daniel Michaels Rick Tetzeli Justin Martin Allison McCormick	Jan. 25, 1993	Eastern Europe is one hot market	Fortune
60	Reed, 1993	M. H. Reed	Mar. 7, 1993	Italian classics and some innovations	The New York Times
61	Kraar, 1993	Louis Kraar	May 31, 1993	Korea's drive for a new economy	Fortune

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
62	Spiers, 1993	Joseph Spiers	May 31, 1993	New Democrats try again—growth with equity by Martin Neil	Fortune
63	Nash, 1994	Nathaniel C. Nash	Jan. 1, 1994	Tougher regulators police emerging Argentine market	The New York Times
64	The NY Times, 1994	Anonymous	Jan. 1, 1994	Indian leader bars key aide from quitting in stock scam	The New York Times
65	Markoff, 1994	John Markoff	Jan. 3, 1994	A high-technology outcry against the U.S. patent system	The New York Times
66	Riordan, 1994	Teresa Riordan	Jan. 10, 1994	A cash prize for individual investors is expected to be part of a new $6.5 million innovation program	The New York Times
67	Labate, 1994a	John Labate	Jan. 10, 1994	Companies to watch: Applied Innovation	Fortune
68	Echikson, 1994	William Echikson	Jan. 24, 1994	Hottest new stock market	Fortune
69	Teitelbaum, 1994	Richard Teitelbaum	Jan. 24, 1994	The best & worst stocks of 1993	Fortune
70	Passell, 1994	Peter Passell	Jan. 30, 1994	Tapping home equity to cushion old age	The New York Times
71	Labate, 1994b	John Labate	Feb. 7, 1994	Technology: Companies to watch	Fortune
72	Kiechel and Schonfeld, 1994	Walter Kiechel III Erick Schonfeld	Apr. 4, 1994	A manager's career in the new economy	Fortune
73	Holmes, 1994	Steven A. Holmes	Jul. 24, 1994	A rights leader minimizes racism as a poverty factor: Cites new economy as 'the bigger culprit'	The New York Times
74	Seligman, 1994	Daniel Seligman	Nov 28, 1994	Great moments in gender equity	Fortune
75	Johnson, 1995	Lawrence Johnson	Jan. 1, 1995	Technology view: Packing ever more into orderly all-in-one boxes	The New York Times
76	Perlez, 1995	Jane Perlez	Jan. 1, 1995	In Ukraine, a free-market lesson learned too well	The New York Times
77	Zuckerman, 1995	L. Zuckerman	Jan. 2, 1995	New stock and bond issues fell by almost 33% in 1994	The New York Times

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
78	Gould, 1995	Carole Gould	Jan. 14, 1995	Equity-income category shines for 3 years	The New York Times
79	Graves, 1995	Jacqueline Graves	Jan. 16, 1995	Guns legislation fires up the arms market	Fortune
80	Michels, 1995	Antony J. Michels	Jan. 16, 1995	The best & worst stocks of 1994	Fortune
81	Serwer, 1995	Andrew E. Serwer	Feb. 20, 1995	Paths to wealth in the new economy: Periods of great change—like the one now under way—favor entrepreneurs with an eye beyond business	Fortune
82	Calem, 1995	Robert E. Calem	Feb. 26, 1995	Innovations on innovations	The New York Times
83	Labate, 1995	John Labate	Apr. 3, 1995	Companies to watch: Equity Marketing	Fortune
84	Schonfeld, 1995	Erick Schonfeld	Apr. 17, 1995	Stetsons off to Texan technology	Fortune
85	The NY Times, 1996a	Anonymous	Jan. 1, 1996	Tracking the markets: January 1, 1996	The New York Times
86	Caruso, 1996	Denise Caruso	Jan. 1, 1996	Technology: Digital commerce	The New York Times
87	Wyatt, 1996	Edward Wyatt	Jan. 2, 1996	What now?: Even if `74 rings a bell, avoiding the stock market remains a risk, too	The New York Times
88	Hylton, 1996a	Richard S. Hylton	Jan. 15, 1996	Why the mania for tech stocks should survive the latest jolt	Fortune
89	Tabor, 1996	Mary B. W. Tabor	Feb. 1, 1996	Western Publishing gives Snyder an equity stake	The New York Times
90	The NY Times, 1996b	Anonymous	Feb. 4, 1996	Gentrified innovation: Coffee bar also sells bagels	The New York Times
91	Serwer, 1996	Andrew Serwer	Feb. 19, 1996	Making sense of the technology stock shakeout	Fortune
92	Hylton, 1996b	Richard S. Hylton	Apr. 1, 1996	Is the stock market too pricey?	Fortune
93	Teitelbaum, 1996	Richard Teitelbaum	Apr. 29, 1996	What’s driving return on equity	Fortune

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
94	Perlez, 1996	Jane Perlez	May 14, 1996	A bourgeoisie blooms and goes shopping: Poland's market reforms take hold: A bourgeoisie blooms and then goes shopping in Poland's new economy	The New York Times
95	The NY Times, 1997	Anonymous	Jan. 1, 1997	Markets closed	The New York Times
96	Wyatt, 1997a	Edward Wyatt	Jan. 2, 1997	The aging bull's fate may be wrapped in stock mutual funds	The New York Times
97	Fabrikant, 1997	Geraldine Fabrikant	Jan. 2, 1997	One challenger to cable TV fades as another appears via satellite: The new weapons are customer service and technology	The New York Times
98	Wyatt, 1997b	Edward Wyatt	Jan. 11, 1997	Stock funds again booming after slowing in December: After a bad December, equity mutual funds take off again	The New York Times
99	Armour and Fines, 1997	Lawrence Armour Gordon Fines	Jan. 13, 1997	A big fan of big stocks	Fortune
100	Schonfeld, 1997	Erick Schonfeld	Feb. 17, 1997	The technology that may save the net	Fortune
101	Krebs, 1997	Michelle Krebs	Mar. 2, 1997	Innovations for cars of the near-future	The New York Times
102	Kover, 1997	Amy Kover	Apr. 14, 1997	What's best in a bear market?	Fortune
103	Krugman, 1997	Paul Krugman	Nov 10, 1997	Requiem for the new economy	Fortune
104	Markoff, 1997	John Markoff	Dec. 29, 1997	The soul of a new economy	The New York Times
105	Truell, 1998	Peter Truell	Jan. 1, 1998	$319.5 billion in securities offerings sets a record: Mergers bolstered stock and bond issues in the face of a crisis in Asia	The New York Times
106	Reuters, 1998	Reuters	Jan. 1, 1998	Colombian heroin dominates U.S. market, government says	The New York Times
107	Vickers, 1998	Marcia Vickers	Jan. 4, 1998	Still high on low-flying technology stocks	The New York Times

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
108	IHT, 1998	Intl. Herald Tribune	Jan. 10, 1998	Collapse of equity sale leaves Peregrine Investments in crisis	The New York Times
109	Burkhart, 1998	Ford Burkhard	Jan. 12, 1998	David Clark, 73; Furthered nuclear research: One innovation would provide more precise analyses of materials	The New York Times
110	Armour, 1998	Lawrence Armour	Feb. 2, 1998	It's bond market heaven	Fortune
111	Greenberg, 1998	Herb Greenberg	Feb. 2, 1998	Beware of net stocks bearing ad tidings	Fortune
112	Lewis, 1998	Michael Lewis	Feb. 8, 1998	Dinosaurs of the new economy	The New York Times
113	Rimer, 1999	Sara Rimer	Jan. 1, 1999	An idea + a philanthropist = a market	The New York Times
114	Gilpin, 1999	Kenneth N. Gilpin	Jan. 1, 1999	Stocks soar phoenix-like in big 4th–quarter turnaround	The New York Times
115	Schmitt, 1999	Eric Schmitt	Jan. 1, 1999	G.O.P. Senator urges action on China technology report	The New York Times
116	Altman, 1999	Lawrence Altman	Jan. 8, 1999	Paul M. Zoll is dead at 87; Pioneered use of pacemakers: Innovations in cardiology in the 1950's led to the develop. of coronary-care units	The New York Times
117	Siegel, 1999	Matt Siegel	Jan. 11, 1999	The worst stock on the S&P 500	Fortune
118	Eckholm, 1999	Erik Eckholm	Jan. 25, 1999	China's disabled are victims of a new economy	The New York Times
119	Fuerbringer, 1999	J. Fuerbringer	Feb. 13, 1999	U.S. treasuries fall, sending stocks down: U.S. treasuries tumble and send equity prices lower	The New York Times
120	Fox, 1999	Justin Fox	Mar. 1, 1999	Efficient markets? Hah!	Fortune
121	Schrage, 1999	Michael Schrage	Mar. 29, 1999	When best practices meet the intranet, innovation takes a holiday	Fortune
122	Warner, 1999	Melanie Warner	Jun. 21, 1999	A technology star gets her net valuation	Fortune
123	Ferguson, 1999	Andrew Ferguson	Nov 22, 1999	Lewis and Clark find the new economy	Fortune

APPENDIX 2: TECH BUBBLE NORMATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Author	Date	Title	Outlet
124	Kelley, 2000	Tina Kelley	Jan. 1, 2000	Before stocks go public, some will go to charity	The New York Times
125	Banerjee, 2000	Neela Banerjee	Jan. 1, 2000	Heartened investors give stock market a lift	The New York Times
126	Race, 2000	Tim Race	Jan. 1, 2000	Technology sprints, but users set their own pace	The New York Times
127	Fuerbringer, 2000	J. Fuerbringer	Jan. 3, 2000	Foreign stocks outperformed U.S. equities	The New York Times
128	McLean, 2000	Bethany McLean	Jan. 10, 2000	Why these biotechs are as hot as net stocks	Fortune
129	Powers, 2000	Ann Powers	Jan. 14, 2000	Bounce and innovation for lovers of Irish music	The New York Times
130	Sanger, 2000	David E. Sanger	Jan. 16, 2000	Lost in cyberspace: Whistling past the new economy	The New York Times
131	Tully, 2000	Shawn Tully	Jan. 24, 2000	Has the market gone mad?	Fortune
132	Gunther and Gashurov, 2000	Marc Gunther Irene Gashurov	Mar. 6, 2000	When technology attacks!	Fortune
133	Warner, 2000	Melanie Warner	Apr. 17, 2000	The new wave meets the new economy	Fortune
134	Schrage, 2000	Michael Schrage	Jul. 10, 2000	Nice building, but the real innovation is in the process	Fortune
135	Schukat, 2000	Anne Schukat	Sep. 4, 2000	VCs build equity—and lots of debt	Fortune

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
1	Proxmire, April 22, 1987	Senator Proxmire	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
2	Heinz, April 22, 1987	Senator Heinz	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
3	Shelby, April 22, 1987	Senator Shelby	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
4	D'Amato, April 22, 1987	Senator D'Amato	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
5	Riegle, April 22, 1987	Senator Riegle	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
6	Hecht, April 22, 1987	Senator Hecht	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
7	Garn, April 22, 1987	Senator Garn	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
8	Dixon, April 22, 1987	Senator Dixon	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
9	Dodd, April 22, 1987	Senator Dodd	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
10	Sasser, April 22, 1987	Senator Sasser	100-76	April 22, 1987	Improper activities in the securities industry	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
11	Chafee, April 22, 1987	Senator Chafee	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
12	Giuliani, April 22, 1987	Rudolph Giuliani	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
13	Lynch, April 22, 1987	Gary Lynch	100-76	April 22, 1987	Improper activities in the securities industry	Oversight
14	Proxmire, Aug. 6, 1987	Senator Proxmire	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
15	D'Amato, Aug. 6, 1987	Senator D'Amato	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
16	Garn, Aug. 6, 1987	Senator Garn	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
17	Dixon, Aug. 6, 1987	Senator Dixon	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
18	Heinz, Aug. 6, 1987	Senator Heinz	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
19	Chafee, Aug. 6, 1987	Senator Chafee	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
20	Karnes, Aug. 6, 1987	Senator Karnes	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
21	Kaufman, Aug. 6, 1987	George Kaufman	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
22	Fox, Aug. 6, 1987	Alan Fox	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
23	Sabin, Aug. 6, 1987	Stan Sabin	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
24	Colton, Aug. 6, 1987	Kent Colton	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
25	Geltman, Aug. 6, 1987	Richard Geltman	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
26	Guthman, Aug. 6, 1987	Richard Guthman	100-254	Aug. 6, 1987	New securities powers for bank holding companies	Oversight
27	Proxmire, Oct. 13, 1987	Senator Proxmire	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
28	Dixon, Oct. 13, 1987	Senator Dixon	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
29	Sasser, Oct. 13, 1987	Senator Sasser	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
30	Garn, Oct. 13, 1987	Senator Garn	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
31	D'Amato, Oct. 13, 1987	Senator D'Amato	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
32	Karnes, Oct. 13, 1987	Senator Karnes	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
33	Heimann, Oct. 13, 1987	John Heimann	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
34	Levich, Oct. 13, 1987	Richard Levich	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
35	Mendoza, Oct. 13, 1987	Roberto Mendoza	100-481	Oct. 13, 1987	Changes in our financial system: Globalization of capital markets and securitization of credit	Oversight
36	Proxmire, Nov. 4, 1987	Senator Proxmire	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
37	D'Amato, Nov. 4, 1987	Senator D'Amato	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
38	Riegle, Nov. 4, 1987	Senator Riegle	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
39	Heinz, Nov. 4, 1987	Senator Heinz	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
40	Shelby, Nov. 4, 1987	Senator Shelby	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
41	Hecht, Nov. 4, 1987	Senator Hecht	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
42	Sasser, Nov. 4, 1987	Senator Sasser	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
43	Gramm, Nov. 4, 1987	Senator Gramm	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
44	Sanford, Nov. 4, 1987	Senator Sanford	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
45	Graham, Nov. 4, 1987	Senator Graham	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
46	Dixon, Nov. 4, 1987	Senator Dixon	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
47	Sarbanes, Nov. 4, 1987	Senator Sarbanes	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
48	Dodd, Nov. 4, 1987	Senator Dodd	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
49	Domenici, Nov. 4, 1987	Senator Domenici	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight
50	Ruder, Nov. 4, 1987	David Ruder	100-536	Nov. 4, 1987	Volatility and panic in the nation's financial markets	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
51	Proxmire, Feb. 2, 1988	Senator Proxmire	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
52	Garn, Feb. 2, 1988	Senator Garn	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
53	Riegle, Feb. 2, 1988	Senator Riegle	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
54	D'Amato, Feb. 2, 1988	Senator D'Amato	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
55	Dixon, Feb. 2, 1988	Senator Dixon	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
56	Sasser, Feb. 2, 1988	Senator Sasser	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
57	Bond, Feb. 2, 1988	Senator Bond	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
58	Wirth, Feb. 2, 1988	Senator Wirth	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
59	Heinz, Feb. 2, 1988	Senator Heinz	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
60	Graham, Feb. 2, 1988	Senator Graham	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
61	Gramm, Feb. 2, 1988	Senator Gramm	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
62	Sanford, Feb. 2, 1988	Senator Sanford	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
63	Chafee, Feb. 2, 1988	Senator Chafee	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
64	Shelby, Feb. 2, 1988	Senator Shelby	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
65	Brady, Feb. 2, 1988	Senator Brady	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
66	Greenspan, Feb. 2, 1988	Alan Greenspan	100-649	Feb. 2, 1988	"Black Monday", the stock market crash of October 19, 1987	Oversight
67	Proxmire, March 31, 1988	Senator Proxmire	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
68	D'Amato, March 31, 1988	Senator D'Amato	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
69	Sasser, March 31, 1988	Senator Sasser	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
70	Sanford, March 31, 1988	Senator Sanford	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
71	Chafee, March 31, 1988	Senator Chafee	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
72	Dixon, March 31, 1988	Senator Dixon	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
73	Greenspan, March 31, 1988	Alan Greenspan	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
74	Ruder, March 31, 1988	David Ruder	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
75	Gramm, March 31, 1988	Wendy Gramm	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
76	Smith, March 31, 1988	Sherwood Smith	100-686	March 31, 1988	Legislative recommendations concerning the stock market break of 1987	Oversight
77	Proxmire, April 20, 1988	Senator Proxmire	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
78	Dixon, April 20, 1988	Senator Dixon	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
79	Sasser, April 20, 1988	Senator Sasser	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
80	Sanford, April 20, 1988	Senator Sanford	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
81	Kirby, April 20, 1988	Robert Kirby	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
82	Machold, April 20, 1988	Roland Machold	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
83	Kanter, April 20, 1988	Robert Kanter	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
84	Sperandeo, April 20, 1988	Victor Sperandeo	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
85	Wunsch, April 20, 1988	R. Steven Wunsch	100-655	April 20, 1988	Intermarket frontrunning and other financial market manipulations	Oversight
86	Proxmire, May 24, 1988	Senator Proxmire	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
87	Garn, May 24, 1988	Senator Garn	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
88	Dixon, May 24, 1988	Senator Dixon	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
89	Bond, May 24, 1988	Senator Bond	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
90	Gramm, May 24, 1988	Senator Gramm	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
91	Hecht, May 24, 1988	Senator Hecht	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
92	D'Amato, May 24, 1988	Senator D'Amato	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
93	Sanford, May 24, 1988	Senator Sanford	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
94	Karnes, May 24, 1988	Senator Karnes	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
95	Heinz, May 24, 1988	Senator Heinz	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
96	Sasser, May 24, 1988	Senator Sasser	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
97	Chafee, May 24, 1988	Senator Chafee	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
98	Gould, May 24, 1988	George Gould	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
99	Greenspan, May 24, 1988	Alan Greenspan	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
100	Ruder, May 24, 1988	David Ruder	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
101	W. Gramm, May 24, 1988	Wendy Gramm	100-787	May 24, 1988	The conclusions and recommendations of the President's Working Group on Financial Markets	Oversight
102	Dodd, Oct. 26, 1989	Senator Dodd	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
103	Heinz, Oct. 26, 1989	Senator Heinz	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
104	Riegle, Oct. 26, 1989	Senator Riegle	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
105	Garn, Oct. 26, 1989	Senator Garn	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
106	Sarbanes, Oct. 26, 1989	Senator Sarbanes	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
107	D'Amato, Oct. 26, 1989	Senator D'Amato	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
108	Dixon, Oct. 26, 1989	Senator Dixon	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
109	Gramm, Oct. 26, 1989	Senator Gramm	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
110	Shelby, Oct. 26, 1989	Senator Shelby	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
111	Mack, Oct. 26, 1989	Senator Mack	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
112	Bryan, Oct. 26, 1989	Senator Bryan	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
113	Brady, Oct. 26, 1989	Nicholas Brady	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
114	Schwab, Oct. 26, 1989	Charles Schwab	101-475	May 18*, Oct. 26, 1989	The Market Reform Act of 1989. S. 648 (*May 18 hearing held by Sec. Subcommittee, thus not analyzed)	Legislative
115	Riegle, Sept. 14, 1990	Senator Riegle	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
116	Shelby, Sept. 14, 1990	Senator Shelby	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
117	Dixon, Sept. 14, 1990	Senator Dixon	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
118	Sanford, Sept. 14, 1990	Senator Sanford	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
119	D'Amato, Sept. 14, 1990	Senator D'Amato	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
120	Petersen, Sept. 14, 1990	Donald Petersen	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
121	Schacht, Sept. 14, 1990	Henry Schacht	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
122	Elkus, Sept. 14, 1990	Richard Elkus	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
123	Ferguson, Sept. 14, 1990	Charles Ferguson	101-1104	Sept. 14, 1990	Declining competitiveness in America's industrial, technological, and financial base	Oversight
124	Riegle, April 17, 1992	Senator Riegle	102-991	April 17, 1992	The effect of the decline in the Japanese markets on the U.S. economy	Oversight
125	Sarbanes, April 17, 1992	Senator Sarbanes	102-991	April 17, 1992	The effect of the decline in the Japanese markets on the U.S. economy	Oversight
126	Greenspan, April 17, 1992	Alan Greenspan	102-991	April 17, 1992	The effect of the decline in the Japanese markets on the U.S. economy	Oversight
127	Breeden, April 17, 1992	Richard Breeden	102-991	April 17, 1992	The effect of the decline in the Japanese markets on the U.S. economy	Oversight
128	Riegle, Feb. 25, 1994	Senator Riegle	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
129	D'Amato, Feb. 25, 1994	Senator D'Amato	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
130	Hove, Feb. 25, 1994	Andrew Hove	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
131	Fiechter, Feb. 25, 1994	Jonathan Fiechter	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
132	Cephas, Feb. 25, 1994	Derrick Cephas	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
133	Drumm, Feb. 25, 1994	William Drumm	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
134	Carson, Feb. 25, 1994	David Carson	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
135	Lewis, Feb. 25, 1994	Chris Lewis	103-510	Feb. 25, 1994	Hearing on mutual to stock conversions. S. 1801	Legislative
136	D'Amato, June 5, 1996	Senator D'Amato	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
137	Gramm, June 5, 1996	Senator Gramm	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
138	Dodd, June 5, 1996	Senator Dodd	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
139	Mack, June 5, 1996	Senator Mack	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
140	Faircloth, June 5, 1996	Senator Faircloth	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
141	Sarbanes, June 5, 1996	Senator Sarbanes	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
142	Bond, June 5, 1996	Senator Bond	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
143	Grams, June 5, 1996	Senator Grams	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
144	Domenici, June 5, 1996	Senator Domenici	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
145	Levitt, June 5, 1996	Arthur Levitt	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
146	Brody, June 5, 1996	Christopher Brody	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
147	Fink, June 5, 1996	Matthew Fink	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
148	Harris, June 5, 1996	Dee Harris	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
149	Krongard, June 5, 1996	A.B. Krongard	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
150	Saltzman, June 5, 1996	Paul Saltzman	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
151	Tomasko, June 5, 1996	Mark Tomasko	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
152	Wechsler, June 5, 1996	Marysue Wechsler	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
153	Lang, June 5, 1996	Robert Lang	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
154	Wallman, June 5, 1996	Steven Wallman	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
155	Boigegrain and Powell, June 5, 1996	Boigegrain and Powell	104-681	June 5, 1996	The Securities Investment Promotion Act of 1996—S. 1815	Legislative
156	Gramm, Sept. 28, 1999	Senator Gramm	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
157	Sarbanes, Sept. 28, 1999	Senator Sarbanes	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
158	Santorum, Sept. 28, 1999	Senator Santorum	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
159	Bayh, Sept. 28, 1999	Senator Bayh	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
160	Bennett, Sept. 28, 1999	Senator Bennett	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
161	Schumer, Sept. 28, 1999	Senator Schumer	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
162	Hagel, Sept. 28, 1999	Senator Hagel	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
163	Grams, Sept. 28, 1999	Senator Grams	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
164	Dodd, Sept. 28, 1999	Senator Dodd	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
165	Grasso, Sept. 28, 1999	Richard Grasso	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
166	Zarb, Sept. 28, 1999	Frank Zarb	106-917	Sept. 28, 1999	Public ownership of the U.S. stock markets	Oversight
167	Levitt, Feb. 28, 2000	Arthur Levitt	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)
168	Campbell, Feb. 28, 2000	Patrick Campbell	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)
169	Helsby, Feb. 28, 2000	Keith Helsby	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)
170	Korins, Feb. 28, 2000	Leopold Korins	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
171	Seijas, Feb. 28, 2000	Robert Seijas	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)
172	Simmons, Feb. 28, 2000	Hardwick Simmons	Not provided	Feb. 28, 2000	The Securities Fees Rationalization Act	Field (New York)
173	Gramm, Feb. 29, 2000	Senator Gramm	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
174	Grasso, Feb. 29, 2000	Richard Grasso	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
175	Komansky, Feb. 29, 2000	David Komansky	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
176	Levitt, Feb. 29, 2000	Arthur Levitt	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
177	Paulson, Feb. 29, 2000	Henry Paulson	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
178	Purcell, Feb. 29, 2000	Philip Purcell	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
179	Schwab, Feb. 29, 2000	Charles Schwab	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
180	Wheat, Feb. 29, 2000	Allen Wheat	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
181	Zarb, Feb. 29, 2000	Frank Zarb	Not provided	Feb. 29, 2000	The financial marketplace of the future	Field (New York)
182	Gramm, April 13, 2000	Senator Gramm	106-939	April 13, 2000	Structure of the securities markets	Oversight
183	Sarbanes, April 13, 2000	Senator Sarbanes	106-939	April 13, 2000	Structure of the securities markets	Oversight
184	Bunning, April 13, 2000	Senator Bunning	106-939	April 13, 2000	Structure of the securities markets	Oversight
185	Schumer, April 13, 2000	Senator Schumer	106-939	April 13, 2000	Structure of the securities markets	Oversight
186	Grams, April 13, 2000	Senator Grams	106-939	April 13, 2000	Structure of the securities markets	Oversight
187	Bennett, April 13, 2000	Senator Bennett	106-939	April 13, 2000	Structure of the securities markets	Oversight
188	Bayh, April 13, 2000	Senator Bayh	106-939	April 13, 2000	Structure of the securities markets	Oversight
189	Greenspan, April 13, 2000	Alan Greenspan	106-939	April 13, 2000	Structure of the securities markets	Oversight
190	Grams, May 8, 2000	Senator Grams	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)

APPENDIX 3: TECH BUBBLE REGULATIVE PILLAR TEXTS (CONTINUED)

No.	Citation Code	Speaker	Hearing number	Date(s)	Title	Type of hearing
191	Brennan, May 8, 2000	David Brennan	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
192	Brodsky, May 8, 2000	William Brodsky	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
193	Dorsch, May 8, 2000	Shawn Dorsch	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
194	Downey, May 8, 2000	David Downey	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
195	Forney, May 8, 2000	Robert Forney	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
196	Gordon, May 8, 2000	Scott Gordon	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
197	Levitt, May 8, 2000	Arthur Levitt	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
198	Putnam, May 8, 2000	Gerald Putnam, Jr.	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
199	Rainer, May 8, 2000	William Rainer	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)
200	Skolnik, May 8, 2000	Bradley Skolnik	Not provided	May 8, 2000	Maintaining leadership in the financial marketplace of the future	Field (Chicago, IL)

APPENDIX 4: EXAMPLE OF ANALYSIS

This appendix includes an example of how one item was coded for this thesis. In total, the three pillars consisted of 400 items (65 speeches by Federal Reserve officials, 135 media articles, and 200 statements at U.S. Senate hearings). While each item was unique in its content, each item was coded according to the same procedure. Thus, readers can mentally extrapolate this example to understand how all 400 items were coded.

The item chosen for this example is a speech given by Reserve Chairman Alan Greenspan in March of 2000, entitled "The revolution in information technology." This item was chosen because it includes examples of an economic connotation; a broader, economic narrative; a tech connotation; an asset-level, tech narrative; and a few means of both institutionalization and failed deinstitutionalization.

Additionally, as the speech was given by Alan Greenspan, it is also important for the large influence that he had on U.S. economic discourse of the late 1990s, as demonstrated in this thesis. As the speech was given in March of 2000, it is also an example of one type of discourse that was found at the peak of the tech bubble, with stocks suffering their first large drop just a few weeks later in April.

It is important to note that while the following is one example from the year 2000, it is certainly not representative of all items from that time period. While this example is largely positive in its tonality and narratives, which is indicative of most items from the year 2000, significant variation in narratives and discourse was still present in this final year of the sample. Readers should consult the empirical chapters of this thesis (Chapters 6 through 9) for a detailed discussion of the variation between items.

The following example on the next seven pages consists of 27 paragraphs, which are labeled as such with a number at the beginning of each paragraph (all of these labels are added). I use these labels as reference points during my explanation of the analytical procedure, the discussion of which immediately follows the example. While the text was formatted to conform to this document's paragraph style, it was not edited or changed in any other way.

Speech by Federal Reserve Chairman Alan Greenspan

"The revolution in information technology"

Before the Boston College Conference on the New Economy, Boston, Massachusetts

March 6, 2000

(1) In the last few years it has become increasingly clear that this business cycle differs in a very profound way from the many other cycles that have characterized post-World War II America. Not only has the expansion achieved record length, but it has done so with economic growth far stronger than expected. Most remarkably, inflation has remained largely subdued in the face of labor markets tighter than any we have experienced in a generation.

(2) A key factor behind this extremely favorable performance has been the resurgence in productivity growth. Since 1995, output per hour in the nonfinancial corporate sector has increased at an average annual rate of 3-1/2 percent, nearly double the average pace over the preceding quarter-century. Indeed, the rate of growth appears to have been rising throughout the period.

(3) My remarks today will focus both on what is evidently the source of this spectacular performance—the revolution in information technology—and on its implications for key government policies.

(4) When historians look back at the latter half of the 1990s a decade or two hence, I suspect that they will conclude we are now living through a pivotal period in American economic history. New technologies that evolved from the cumulative innovations of the past half-century have now begun to bring about dramatic changes in the way goods and services are produced and in the way they are distributed to final users. Those innovations, exemplified most recently by the multiplying uses of the Internet, have brought on a flood of startup firms, many of which claim to offer the chance to revolutionize and dominate large shares of the nation's production and distribution system. And participants in capital markets, not comfortable dealing with discontinuous shifts in economic structure, are groping for the appropriate valuations of these companies. The exceptional stock price volatility of these newer firms and, in the view of some, their outsized valuations indicate the difficulty of divining the particular technologies and business models that will prevail in the decades ahead.

(5) How did we arrive at such a fascinating and, to some, unsettling point in history? While the process of innovation, of course, is never-ending, the development of the transistor after World War

II appears in retrospect to have initiated a special wave of innovative synergies. It brought us the microprocessor, the computer, satellites, and the joining of laser and fiber-optic technologies. By the 1990s, these and a number of lesser but critical innovations had, in turn, fostered an enormous new capacity to capture, analyze, and disseminate information. It is the growing use of information technology throughout the economy that makes the current period unique.

(6) However, until the mid-1990s, the billions of dollars that businesses had poured into information technology seemed to leave little imprint on the overall economy. The investment in new technology arguably had not yet cumulated to be a sizable part of the U.S. capital stock, and computers were still being used largely on a stand-alone basis. The full value of computing power could be realized only after ways had been devised to link computers into large-scale networks. As we all know, that day has arrived.

(7) At a fundamental level, the essential contribution of information technology is the expansion of knowledge and its obverse, the reduction in uncertainty. Before this quantum jump in information availability, most business decisions were hampered by a fog of uncertainty. Businesses had limited and lagging knowledge of customers' needs and of the location of inventories and materials flowing through complex production systems. In that environment, doubling up on materials and people was essential as a backup to the inevitable misjudgments of the real-time state of play in a company. Decisions were made from information that was hours, days, or even weeks old.

(8) Of course, large voids of information still persist, and forecasts of future events on which all business decisions ultimately depend will always be prone to error. But information has become vastly more available in real time—resulting, for example, from developments such as electronic data interface between the retail checkout counter and the factory floor or the satellite location of trucks. This surge in the availability of more timely information has enabled business management to remove large swaths of inventory safety stocks and worker redundancies. Stated differently, fewer goods and worker hours are now involved in activities that, although perceived as necessary insurance to sustain valued output, in the end produced nothing of value.

(9) Those intermediate production and distribution activities, so essential when information and quality control were poor, are being reduced in scale and, in some cases, eliminated. These trends may well gather speed and force as the Internet alters relationships of businesses to their suppliers and their customers, a topic to which I shall return in a moment.

(10) The process of information innovation has gone far beyond the factory floor and distribution channels. Computer modeling, for example, has dramatically reduced the time and cost required to design items ranging from motor vehicles to commercial airliners to skyscrapers. In a very different part of the economy, medical diagnoses have become more thorough, more accurate, and far faster. With access to heretofore unavailable information, treatment has been hastened, and hours of procedures have been eliminated. Moreover, the potential for discovering more-effective treatments has been greatly enhanced by the parallel revolution in biotechnology, including the ongoing effort to map the entire human genome. That work would have been unthinkable without the ability to store and process huge amounts of data.

(11) The advances in information technology also have been an impetus to the ongoing wave of strategic alliance and merger activity. Hardly a week passes without the announcement of another blockbuster deal. Many of these combinations arise directly from the opportunities created by new technology—for example, those at the intersection of the Internet, telecommunications, and the media. It is not possible to know which of the many new technologies will ultimately find a firm foothold in our rapidly changing economy. Accordingly, many high-tech companies that wish to remain independent are hedging their bets by entering into strategic alliances with firms developing competing technologies.

(12) In addition, the new technology has fostered full mergers that allow firms to take greater advantage of economies of scale and thus reduce costs. Without highly sophisticated information technology, it would be nearly impossible to manage firms on the scale of some that have been proposed or actually created of late. Although it will be a while before the ultimate success of these endeavors can be judged, information technology has almost certainly pushed out the point at which scale diseconomies begin to take hold for some industries.

(13) The impact of information technology has been keenly felt in the financial sector of the economy. Perhaps the most significant innovation has been the development of financial instruments that enable risk to be reallocated to the parties most willing and able to bear that risk. Many of the new financial products that have been created, with financial derivatives being the most notable, contribute economic value by unbundling risks and shifting them in a highly calibrated manner. Although these instruments cannot reduce the risk inherent in real assets, they can redistribute it in a way that induces more investment in real assets and, hence, engenders higher productivity and standards of living. Information technology has made possible the creation, valuation, and exchange of these complex financial products on a global basis.

(14) At the end of the day, the benefits of new technologies can be realized only if they are embodied in capital investment, defined to include any outlay that increases the value of the firm. For these investments to be made, the prospective rate of return must exceed the cost of capital. Technological synergies have enlarged the set of productive capital investments, while lofty equity values and declining prices of high-tech equipment have reduced the cost of capital. The result has been a veritable explosion of spending on high-tech equipment and software, which has raised the growth of the capital stock dramatically over the past five years. The fact that the capital spending boom is still going strong indicates that businesses continue to find a wide array of potential high-rate-of-return, productivity-enhancing investments. And I see nothing to suggest that these opportunities will peter out any time soon.

(15) Indeed, many argue that the pace of innovation will continue to quicken in the next few years, as companies exploit the still largely untapped potential for e-commerce, especially in the business-to-business arena, where most observers expect the fastest growth. An electronic market that would automatically solicit bids from suppliers has the potential for substantially reducing search and transaction costs for individual firms and for the economy as a whole. This reduction would mean less unproductive search and fewer workhours more generally embodied in each unit of output, enhancing output per hour. Already, major efforts have been announced in the auto industry to move purchasing operations to the Internet. Similar developments are planned or in operation in many other industries as well. It appears to be only a matter of time before the Internet becomes the prime venue for the trillions of dollars of business-to-business commerce conducted every year.

(16) There can be little doubt that, on balance, the evolving surge in innovation is an unmitigated good for the large majority of the American people. Yet, implicit in the very forces of change that are bringing us a panoply of goods and services considered unimaginable only a generation ago are potential financial imbalances and worker insecurities that need to be addressed if the full potential of our technological largesse is to be achieved.

(17) As I testified before the Congress last month, accelerating productivity entails a matching acceleration in the potential output of goods and services and a corresponding rise in real incomes available to purchase the new output. The pickup in productivity however tends to create even greater increases in aggregate demand than in potential aggregate supply. This occurs principally because a rise in structural productivity growth, not surprisingly, fosters higher expectations for long-term corporate earnings. These higher expectations, in turn, not only spur business investment

but also increase stock prices and the market value of assets held by households, creating additional purchasing power for which no additional goods or services have yet been produced.

(18) Historical evidence suggests that perhaps three to four cents out of every additional dollar of stock market wealth eventually is reflected in increased consumer purchases. The sharp rise in the amount of consumer outlays relative to disposable incomes in recent years, and the corresponding fall in the saving rate, is a reflection of this so-called wealth effect on household purchases. Moreover, higher stock prices, by lowering the cost of equity capital, have helped to support the boom in capital spending.

(19) Outlays prompted by capital gains in equities and homes in excess of increases in income, as best we can judge, have added about 1 percentage point to annual growth of gross domestic purchases, on average, over the past half-decade. The additional growth in spending of recent years that has accompanied these wealth gains, as well as other supporting influences on the economy, appears to have been met in equal measure by increased net imports and by goods and services produced by the net increase in newly hired workers over and above the normal growth of the workforce, including a substantial net inflow of workers from abroad.

(20) But these safety valves that have been supplying goods and services to meet the recent increments to purchasing power largely generated by capital gains cannot be expected to absorb indefinitely an excess of demand over supply. Growing net imports and a widening current account deficit require ever-larger portfolio and direct foreign investments in the United States, an outcome that cannot continue without limit.

(21) Imbalances in the labor markets perhaps may have even more serious implications for potential inflation pressures. While the pool of officially unemployed and those otherwise willing to work may continue to shrink, as it has persistently over the past seven years, there is an effective limit to new hiring, unless immigration is uncapped. At some point in the continuous reduction in the number of available workers willing to take jobs, short of the repeal of the law of supply and demand, wage increases must rise above even impressive gains in productivity. This would intensify inflationary pressures or squeeze profit margins, with either outcome capable of bringing our growing prosperity to an end. In short, unless we are able to indefinitely increase the rate of capital flows into the United States to finance rising net imports or continuously augment immigration quotas, overall demand for goods and services cannot chronically exceed the underlying growth rate of supply.

(22) Our immediate goal at the Federal Reserve should be to encourage the economic and financial conditions that will best foster the technological innovation and investment that spur structural productivity growth. It is structural productivity growth—not the temporary rise and fall of output per hour associated with various stages of the business cycle—that determines how rapidly living standards rise over time. Achievement of this goal requires a stable macroeconomic environment of sustained growth and continued low inflation. That, in turn, means that the expansion of demand must moderate into alignment with the more rapid growth rate of potential supply.

(23) The current gap between the growth of supply and demand for goods and services, of necessity, has been reflected in an excess in the demand for funds over new savings from Americans, including those savings generated by rising budget surpluses. As a consequence, real long-term corporate borrowing costs have risen significantly over the past two years. Presumably as a result, many analysts are now projecting that the rate of increase in stock market wealth may soon begin to slow. If so, the wealth effect adding to spending growth would eventually be damped, and both the rate of increase in net imports as a share of GDP, and the rate of decline in the pool of unemployed workers willing to work should also slow. However, so long as these two imbalances continue, reflecting the excess of demand over supply, the level of potential workers will continue to fall and the net debt to foreigners will continue to rise by increasing amounts.

(24) Until market forces, assisted by a vigilant Federal Reserve, effect the necessary alignment of the growth of aggregate demand with the growth of potential aggregate supply, the full benefits of innovative productivity acceleration are at risk of being undermined by financial and economic instability.

(25) The second consequence of rapid economic and technological change that needs to be addressed is growing worker insecurity, the result, I suspect, of fear of potential job skill obsolescence. Despite the tightest labor markets in a generation, more workers currently report they are fearful of losing their jobs than similar surveys found in 1991 at the bottom of the last recession. The marked move of capital from failing technologies to those at the cutting edge has quickened the pace at which job skills become obsolete. The completion of high school used to equip the average worker with sufficient skills to last a lifetime. That is no longer true, as evidenced by community colleges being inundated with workers returning to school to acquire new skills and on-the-job training being expanded and upgraded by a large proportion of American business.

(26) Not unexpectedly, greater worker insecurities are creating political pressures to reduce the fierce global competition that has emerged in the wake of our 1990s technology boom. Protectionist

measures, I have no doubt, could temporarily reduce some worker anxieties by inhibiting these competitive forces. However, over the longer run such actions would slow innovation and impede the rise in living standards. They could not alter the eventual shifts in production that owe to enormous changes in relative prices across the economy. Protectionism might enable a worker in a declining industry to hold onto his job longer. But would it not be better for that worker to seek a new career in a more viable industry at age 35 than hang on until age 50, when job opportunities would be far scarcer and when the lifetime benefits of additional education and training would be necessarily smaller? To be sure, assisting those who are already close to retirement in failing industries is an imperative. But that can be readily accomplished without distorting necessary capital flows to newer technologies through protectionist measures. More generally, we must ensure that our whole population receives an education that will allow full participation in this dynamic period of American economic history.

(27) These years of extraordinary innovation are enhancing the standard of living for a large majority of Americans. We should be thankful for that and persevere in policies that enlarge the scope for competition and innovation and thereby foster greater opportunities for everyone.

Analysis results

Analysis for each item was comprised of Stages 3 and 4 of the analytical procedure, as outlined on Table 4.1 in the methods chapter. These two stages are explained below.

Stage 3: Narrative analysis

As explained in Chapter 4, this third stage of analysis was designed to capture the emergence and characteristics of the various narratives that emerged in each text. This stage was conducted in four highly interrelated and iterative steps, as explained below.

Step 1: Connotation of U.S. economy/companies

Coding: Positive

Explanation: The positive tonality of this speech is established in the first paragraph, as Greenspan remarks that the current expansion has "achieved record length" with "economic growth far stronger than expected." In the same paragraph, he notes, "inflation has remained largely subdued." This positive connotation continues throughout the entire article, as Greenspan comments on how businesses can reduce uncertainty in terms of knowledge of their customers and inventory management (paragraph 7), the large number of "blockbuster" alliances and mergers (paragraph 11), the ability to take "greater advantage of economies of scale" (paragraph 12), the development of risk-reducing derivative instruments (paragraph 13), and the capital spending boom in high-tech equipment (paragraph 14). While Greenspan does note two key impeding forces to the current boom—those being financial imbalances and worker insecurity—the overall positive tonality of the speech is confirmed in the final paragraph, where Greenspan observes, "These years of extraordinary innovation are enhancing the standard of living for a large majority of Americans."

Step 2: U.S. economy/company narratives

Coding: New Economy

Explanation: Such a coding for this speech is first hinted at in the title of the conference, the "Boston College Conference on the New Economy," but Greenspan makes this interpretation of the U.S. economy clear throughout.

First, in the first paragraph, he notes that the current business cycle is clearly different from any such cycle over the past 50 years. He notes the record productivity growth (paragraph 2), subdued inflation (paragraph 1), and the source of this growth, the revolution in information technology

(paragraph 3). He elaborates in the fourth paragraph that an accumulation of innovations has resulted in "dramatic changes in the way goods and services are produced." This is a quintessential explanation of the "new economy" of the late 1990s, where rapid innovations in information technology were resulting in dramatically higher growth rates and the replacement of manufacturing sector jobs with new, IT-focused service sector jobs.

This speech also reveals a great deal about the context and key enabling and impeding forces of the new economy. In terms of context, Greenspan highlights this in the third paragraph: "…what is evidently the source of this spectacular performance—the revolution in information technology." Again, his elaboration of the cumulative impact of innovations over the past 50 years in the fourth paragraph further reiterates the point that this "new economy" is only possible because of the rapid and cumulative changes that the IT revolution has brought about.

In terms of enabling forces, Greenspan highlights a few, including technological advancements such as the linkage of computers into large-scale networks (paragraph 6), free global trade (paragraph 26), and a world-class educational system (paragraph 26). Impeding forces include financial imbalances and inflationary pressures (paragraphs 17–24), worker insecurities (paragraphs 25 and 26), and protectionism (paragraph 26).

Step 3: Connotation of tech companies/stocks

Coding: Positive

Explanation: Greenspan expounds an extremely positive view of technology and tech companies throughout this speech. As explained above, in this speech, Greenspan views information technology as the sole source of the spectacular performance of the U.S. economy. While he notes that some tech companies may not last due to tough competition and an unknown future, tech companies are seen as revolutionizing the nation's production and distribution system (paragraph 4). Thus, all the benefits of the new economy, as explained above, are made possible by technology.

Step 4: Tech company/stock narratives

Coding: Technological Dominance

Explanation: This narrative is evident throughout and the sole focus of this speech, as seen in the title, "The revolution in information technology." In the fourth paragraph, Greenspan observes, "Those innovations, exemplified most recently by the multiplying uses of the Internet, have brought

on a flood of startup firms, many of which claim to offer the chance to *revolutionize and dominate* large shares of the nation's production and distribution system (emphasis added)." In this speech, Greenspan also notes the high market valuations awarded to tech startups.

The destinator or context for this dominance is the profound, "discontinuous" shift in the economy (paragraph 4). The accumulation of innovations over the past 50 years is also noted as a key reason such dominance is now possible.

In terms of enabling and impeding forces, constant innovation (paragraph 4), technological synergies (paragraph 6), and high equity values or a low cost of capital (paragraph 14) are highlighted as key enablers, while intense competition (paragraph 11) and a lack of skills and education (paragraphs 25 and 26) are seen as impeding forces.

Stage 4: Institutional analysis

This fourth stage was conducted in a more open manner, as I examined the broader institutional features of each item. Below, I list some of the key questions posed by such an analysis. Such questions and their answers then led me to consider further questions. While this process remained open and flexible, the key concern remained understanding whether and how the boom narratives regarding tech companies and the new economy came to be a taken-for-granted assumption, or socially established facts, for investors during the late 1990s.

What are some of the key assumptions?

Several assumptions are made in this speech. One key assumption is that Greenspan sees the economy's current condition, being its remarkable growth, as a culmination of over 50 years of innovation and that this pace of change will continue. He comments, "Indeed, many argue that the pace of innovation will continue to quicken in the next few years…(paragraph 15)." He elaborates that there is still the "largely untapped potential for e-commerce," which will grow exponentially over the next few years. Such an assumption is so important because it suggests that, far from the boom being about to end, it is only just beginning.

What is seen as self-evident, requiring little explanation?

This speech is full of extremely confident, matter-of-fact language. Examples include (all emphases added), "…it has become *increasingly clear* that this business cycle *differs in a very profound way* from the many other cycles that have characterized post-World War II America (paragraph 1)," "*And I see nothing to suggest* that these opportunities will peter out any time soon

(paragraph 14)," and "…information technology has *almost certainly* pushed out the point at which scale diseconomies begin to take hold for some industries (paragraph 12)."

As a result of such language, the narratives of a "New Economy" and "Technological Dominance" come across as heavily institutionalized in this speech.

What benefits or consequences are mentioned?

In this speech, the technological revolution is viewed as a huge boost for U.S. productivity (paragraph 2), employment (paragraph 21), living standards (paragraph 13), and business growth and efficiency (paragraphs 7, 8, and throughout). Protectionist measures are viewed as resulting in slower innovation and lower living standards (paragraph 26).

What is it possible to speak of? Has this changed over time?

In paragraph 12, Greenspan argues that IT has now "pushed out the point at which scale diseconomies begin to take hold for some industries." Thus, IT enables larger, conglomerate-style corporations, even those that were inefficient in past times. This argument bodes well for organizations that plan to grow beyond what was once deemed reasonable or practicable.

Also, this argument and Greenspan's view that "blockbuster" strategic alliances are beneficial combine to offer a very powerful incentive for companies to grow and merge and for investors to support such behavior.

What terms are re-used or re-circulated?

Concepts such as the "new economy," U.S. tech dominance, and unprecedented productivity growth were altogether absent from the first half of this pillar. In fact, quite the contrary, many speakers argued that U.S. companies were falling behind and struggling to compete in an increasingly globalized and deregulated world economy. However, in recent years, these terms are appearing rather commonly.

What terms are repressed or abandoned? Any threats to mainstream discourse?

While Greenspan does note that some see "outsized valuations" (paragraph 4) for tech companies and that many tech companies will not last in a constantly changing economy (paragraph 11), he does not mention the possibility of a large-scale stock bubble or any systemic risk to the U.S. economy. In fact, in this speech, Greenspan views innovations in derivatives as a means of redistributing risk, and thus allow "more investment in real assets (paragraph 13)."

Such a failure to mention the possibility of a bubble is interesting, as just two months prior, in a January 13 speech, Greenspan acknowledged that the U.S. may just be experiencing "one of the many euphoric speculative bubbles that have dotted human history." Thus, the omission of such a possibility in this speech is rather significant, and could be viewed as a sign that Greenspan no longer views a large-scale bubble as a real possibility.

Who has access to this narrative?

Alan Greenspan is the only voice in this speech. Altogether in this sample, Greenspan delivered 37 of the 65 speeches, giving him enormous access to and power over the nation's economic dialogue.

Concluding comments

As a result of the above analysis, a few conclusions were reached regarding the institutionalization, and failed deinstitutionalization, of boom narratives during the U.S. tech boom. First, this speech was part of a broader trend of speeches becoming increasingly positive and including more boom narratives in the late 1990s. The narratives of "New Economy" and "Technological Dominance" would both instill great confidence in investors, leading them to believe the boom would continue for the foreseeable future. As Chairman Greenspan delivered this speech at one of the premier universities in the U.S., this speech acquired immediate legitimacy. I made a note that my write-up must note the spread and repetition of boom narratives in this pillar, along with the important role that Greenspan played.

Second, this speech made it increasingly clear that the theme of technology underwent a dramatic shift over time, for in the late 1980s and early 1990s technology was viewed in a mixed manner, as both a cause of and a solution to financial problems. Increasingly, however, a technological, structural shift in the U.S. economy is viewed as the driving force and context behind the dominance of U.S. tech companies and the new, service-based economy that is emerging. I noted that this transition should be explained in my thesis.

Third, the use of matter-of-fact language was becoming increasingly common, especially by Greenspan, and especially in very positive discourse. I note that this language use should be explained in the thesis, and that "unequivocal language" would be an appropriate heading.

Finally, Greenspan does acknowledge in this speech that, "in the view of some," the valuations of tech startups may be "outsized (paragraph 4)." He also notes some very real impediments to continued growth, such as financial imbalances and the limited supply of skilled labor in the U.S.

workforce. However, these few comments are far outweighed by the overwhelmingly positive and optimistic discourse in the rest of the speech. In addition, an earlier speech by Greenspan did acknowledge that the U.S. could be in the midst of a large-scale, speculative bubble, and this speech did not. I note that the balance of negative to positive discourse needs to be further examined and explained, and that this speech should be highlighted as an instance where a Federal Reserve speaker failed to mention the possibility of a bubble, just a month before the market started to crash.